[COMMITTEE PRINT]

79TH CONGRESS 2d Session	SENATE	SUBCOMMITTEE MONOGRAPH No. 6

A PROGRAM FOR GERMAN ECONOMIC AND INDUSTRIAL DISARMAMENT

A STUDY SUBMITTED BY THE FOREIGN ECONOMIC ADMINISTRATION (ENEMY BRANCH)

TO THE

SUBCOMMITTEE ON WAR MOBILIZATION

OF THE

COMMITTEE ON MILITARY AFFAIRS

UNITED STATES SENATE

APRIL 1945



Printed for the use of the Committee on Military Affairs

UNITED STATES
GOVERNMENT PRINTING OFFICE
81778 WASHINGTON : 1945

S0049
BEST AVAILABLE COPY

COMMITTEE ON MILITARY AFFAIRS

ELBERT D. THOMAS, Utah, *Chairman*

EDWIN C. JOHNSON, Colorado
LISTER HILL, Alabama
SHERIDAN DOWNEY, California
HARLEY M. KILGORE, West Virginia
JAMES E. MURRAY, Montana
JOSEPH C. O'MAHONEY, Wyoming
ROBERT F. WAGNER, New York
TOM STEWART, Tennessee
BURNET R. MAYBANK, South Carolina
FRANK P. BRIGGS, Missouri

WARREN R. AUSTIN, Vermont
STYLES BRIDGES, New Hampshire
CHAN GURNEY, South Dakota
CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa
THOMAS C. HART, Connecticut
H. ALEXANDER SMITH, New Jersey

PAUL L. BADGER, *Clerk*
WALTER I. SMALLEY, *Special Assistant*

SUBCOMMITTEE ON WAR MOBILIZATION

HARLEY M. KILGORE, West Virginia, *Chairman*

ELBERT D. THOMAS, Utah
EDWIN C. JOHNSON, Colorado
JAMES E. MURRAY, Montana

CHAPMAN REVERCOMB, West Virginia
GEORGE A. WILSON, Iowa

HERBERT SCHIMMEL, *Chief, Investigations and Hearings*
COLEMAN ROSENBERGER, *Hearings Editor*

CONTENTS

[Refer to each section indicated by Roman numerals for its detailed page index]

	Page
Introductory note	v
Memorandum of transmittal	vii
Preface	ix
The Program in Brief	
A. Summary of the FEA disarmament program for Germany	1
B. Statement in support of the program	25
C. Development of the program	43
Part I—The Program in Detail	
I. A military disarmament program	65
II. An industrial disarmament program	85
III. A scientific disarmament program	165
IV. An institutional disarmament program	191
V. External security	217
VI. The atomic bomb and its implications for German disarmament	261
Part II—Administration of the Program	
VII. The relationship of disarmament planning to reparation	267
VIII. The administration of the program during occupation	287
IX. Post-occupation disarmament control	311
X. The separation from Germany of the Ruhr-Rhineland as a post-occupation control measure	325
Part III—Economic Aspects of the Program	
XI. The relation of disarmament to the German economy	333
XII. German disarmament and the economy of Europe	369

Appendixes will be printed as a separate document.

INTRODUCTORY NOTE

The material in this volume has been submitted to the Subcommittee on War Mobilization of the Senate Committee on Military Affairs by the Enemy Branch of the Foreign Economic Administration, pursuant to the testimony before the subcommittee on December 20, 1945, of Mr. Henry H. Fowler, Director of the Enemy Branch of the Foreign Economic Administration. The status of this material is the same as that of other carefully prepared testimony given orally by individual witnesses. The information is submitted for committee deliberation.

The Enemy Branch of the Foreign Economic Administration wishes to make clear that this study should not be characterized as an expression of the adopted policy or program of the United States Government, except as the policy recommended may have been reflected in the Yalta Declaration, the Berlin Protocol, or public announcements by the President or the Secretary of State.

This study is a program recommended by an official agency charged by the President with the responsibility for making a thorough examination of German economic and industrial disarmament. Until or unless the program herein presented is adopted in whole or in part by the appropriate policy-determining officials, its terms are purely advisory.

HARLEY M. KILGORE,
Chairman, Subcommittee on War Mobilization.

MEMORANDUM OF TRANSMITTAL

DECEMBER 19, 1945.

To: Mr. Leo T. Crowley.
From: Henry H. Fowler, Director, FEA Enemy Branch.
Subject: Final report on German economic and industrial disarmament.

I am submitting herewith the final report of the FEA Enemy Branch on a program for German economic and industrial disarmament. This report and the reports on the 31 technical industrial disarmament study projects, now complete, constitute a discharge of the responsibility delegated to the FEA by the late President Roosevelt on September 28, 1944, when he directed the FEA to conduct: "Studies from the economic standpoint of what should be done after the surrender of Germany to control its power and capacity to make war in the future."

As you know, this function was transferred to the Department of State by an Executive order of September 27, 1945, which directed the dissolution of the entire Foreign Economic Administration. Therefore, this report constitutes a final discharge of the assignment of the FEA Enemy Branch, which was created to carry on these studies.

This report, in process of completion at the time of the transfer to the Department of State and your resignation as FEA Administrator, has been completed under my direction and is, therefore, now submitted as a final accounting for the work of the FEA Enemy Branch, rather than the Department of State.

Arrangements have been made for the adequate distribution of copies of this report to the military and civilian officials in our Government both here and abroad who are responsible in policy-making or executive capacities for our German policy and its administration. As you know, mimeographed copies of the reports of the Technical Industrial Disarmament Committees (outlined in appendix D of this report) were delivered to the United States Group Control Council and interested officials in the Federal agencies in August of this year. Additional printed copies of these TIDC reports have been prepared and have been or will be delivered.

Many of the general principles originally developed in the FEA studies, summarized in this final report, have become adopted United States policy in the Berlin Protocol. However, at this writing, the report is not to be characterized as an adopted program of the United States Government. The extent or particulars in which the recommendations in this report or the auxiliary TIDC reports are to become adopted United States policy or program will be determined by the appropriate policy-making and executive officials in the State and War Departments, who have not yet reviewed the document. Therefore, the terms of the report, as presented, are advisory.

I am complying with a request of Chairman Kilgore of the Subcommittee of the Senate Military Affairs Committee to supply his committee with a copy of this report and the TIDC reports for public release by the committee. In view of the deep national concern in the prevention of any recurrence of German aggression, I know we are in agreement that this public accounting for our work over the past year and the availability to the public of the information and views we have assembled is in the public interest.

In conclusion, several acknowledgments are in order.

First, to the various departments, agencies, and individuals who participated in the TIDC project which resulted in the 31 auxiliary reports on which this final report is based. The voluntary contribution of the large numbers of experts in other agencies (recorded in appendix D) represents a unique example of the interagency cooperation without which much of the value of this study project would have been impossible of achievement.

Second, to the staff of the FEA Enemy Branch. It is impossible to record here the personal contributions of the many individuals whose work has gone into the collection of the basic information, coordination and development of the various study projects, and the preparation of this document.

Lastly, I should like to record on behalf of the Enemy Branch our deep appreciation of your support and backing at all times in our work, now complete.

PREFACE

	Page
Functions of this report	xi
Basis of the report	xi
Acknowledgments	xii
Status of the report as policy—	
Recommendations not yet adopted policy	xii
Future studies	xiii
Limitations of the report	xiii

PREFACE

This report sets forth a detailed program for the economic and industrial disarmament of Germany, pursuant to a direction from the President to the Foreign Economic Administrator which reads as follows:

> 7. *Control of the war-making power of Germany.*—You have been making studies from the economic standpoint of what should be done after the surrender of Germany to control its power and capacity to make war in the future. This work must be accelerated, and under the guidance of the Department of State you should furnish assistance by making available specialists to work with the military authorities, the foreign service, and such other American agencies and officials as participate with the United Nations in seeing to it that Germany does not become a menace again to succeeding generations.

An Executive order of September 27, 1945, directed the dissolution of the Foreign Economic Administration and the transfer of the function described above to the Department of State. This report constitutes a final response of the Foreign Economic Administration to the President's letter.

This document has been prepared by the Enemy Branch of the FEA, an organization which was constituted especially to discharge the assignment described above and has coordinated and conducted a series of specific study projects on which the report is based.

This report is the last of a series of documents on the subject which have been prepared and submitted formally or informally by the FEA to appropriate military and civilian authorities. On January 10, 1945, an interim report on study projects relating to German economic and industrial disarmament was submitted to the President and a number of interested persons in the Government. (See appendix A.) A series of informal memoranda dealing with the problem of reparation (see appendix B) and a report entitled "Preliminary Studies of Reparations From Selected German Industries" were presented to the United States member of the Reparations Commission in March and May respectively. On April 15, 1945, a preliminary program for German economic and industrial disarmament was submitted by the FEA to the Secretary of State with copies to the Secretaries of War, Navy, and Treasury. (See appendix C.) On August 12, 1945, a series of individual reports of the TID committees was delivered to the United States Group Control Council in Germany. (For summaries, see appendix D.) From time to time many other documents and proposals bearing on the subject have been communicated to the agencies and departments responsible for policy determination, international negotiations, and administrative execution in this field.

It should be understood that, in connection with this work on German economic and industrial disarmament, the FEA has not acted as an operating agency, but has been confined in its functions to work in the field of planning and programing. The responsibility

for carrying on negotiations and administering or executing the decisions made on this subject has been lodged in the State and War Departments.

FUNCTIONS OF THIS REPORT

This report is designed to assist in three ways the military and civilian authorities charged with the responsibility for making and executing United States policy:

1. *The report provides a supporting brief for the general principles on German economic and industrial disarmament announced in the Berlin protocol.*—As the report will subsequently indicate, the Berlin protocol, to an even greater extent than the Yalta Declaration, has taken the general principles of the FEA disarmament program out of the realm of the hypothetical into the area of agreement both as to policy and administrative machinery. Yet, it is quite likely that these principles will be challenged again and again. Therefore, this report endeavors to lay bare their roots in history, in the technical realities of modern total war, and the needs of a lasting peace.

2. *The report provides a specific and detailed program for executing the principles on German economic and industrial disarmament announced in the Berlin Protocol.*—The Protocol, confirming general principles of Allied policy for Germany, constitutes only the first phase of a successful negotiation and execution of the security program contemplated. The agreement remains to be defined with particularity in detailed and technical negotiation at the Control Council or diplomatic level. For example: The removal or destruction of plant and equipment proscribed under a realistic military and industrial disarmament program remains to become an accomplished fact. Similarly, disarmament controls (for example, of new plant construction in dangerous fields of industry or of the excessive importation of critical or strategic materials and products) remain to be instituted in order to prevent a subsequent rearmament of Germany, militarily and industrially. It is for the period in which the danger of rearmament will become acute that the specific and detailed programs set forth in this report are submitted as yardstick recommendations.

3. *The report outlines a long-term program for a lasting and permanent control of Germany's war-making power.*—The Berlin Protocol makes clear that it constitutes an arrangement for the initial period of occupational control. The preparation of detailed international and Allied arrangements for a long-term control of Germany and for an ultimate peace treaty with her will involve vital decisions which are to a considerable extent anticipated and developed herein.

BASIS OF THE REPORT

The program proposed here for German economic and industrial disarmament is not based upon hasty or limited examination of the problem. It is the result of intensive study over the past year by the FEA Enemy Branch, consisting of several hundred persons, assisted by approximately 250 experts who, because of their particular qualifications for the task, have been assigned by various Government agencies or enlisted as consultants from private life to participate in

the technical industrial disarmament study project. (For a detailed account of this study project, and its conclusions, see appendix D.)

In addition, in the course of the preparation of this program the staff of the FEA Enemy Branch has been afforded the opportunity of months of detailed consultation with various interested agencies at home and in the field. The Director of the Branch, assisted by various members of the staff, served on the Informal Policy Committee on Germany and its working committee which developed the basic military government directive, approved by the President and dispatched to General Eisenhower in April of this year, and the basic directive on reparation policy handed to the United States member of the Reparations Commission early in May. During these discussions, members of the staff were able to obtain the full benefit of the points of view of various representatives of other interested departments such as War, Navy, and Treasury. Under the terms of the President's letter, the staff has been in constant consultation with the Department of State. In August and September, a special mission from the staff was constituted and dispatched to the field, spending about a month in observation on the ground and in consultation with members of the staff of the United States Group Control Council on the subject matter covered in this report.

ACKNOWLEDGMENTS

In this connection, the FEA Enemy Branch wishes to acknowledge the splendid cooperation and valuable assistance which has been rendered by personnel made available to the Technical Industrial Disarmament Committees through other Government agencies including the State, War, Navy, Commerce, Agriculture, and Interior Departments, the Office of War Mobilization and Reconversion, the Office of Strategic Services, the War Production Board, the Office of Scientific Research and Development, and the War Shipping Administration. It wishes to acknowledge particularly the helpful guidance of the State Department which has enabled the FEA Enemy Branch to keep the prosecution of its study projects closely attuned to the rapid development of world events and to bring some of its early findings to bear on the formulation of United States policy. It is also grateful for the opportunity provided by the War Department to observe some of the problems involved in the field. Without this cooperation of other agencies of Government the prosecution of the vast and complicated study projects on which this report is based, requiring the experience of experts not available in any one agency, would have been impossible.

STATUS OF THE REPORT—RECOMMENDATIONS NOT YET ADOPTED POLICY

In presenting the report, the FEA wishes to make clear that it is not to be characterized as an expression of the policy or plans of the United States Government, except as those plans may have been the subject of the Yalta and Berlin declarations or public announcements by the President and the Secretary of State. It is a program of recommendations prepared by an official agency charged with the responsibility of making a thorough study of the subject.

FUTURE STUDIES

The FEA Enemy Branch does not imply that the report or its recommendations is the last word on the subject. It is a last response of the FEA on the subject before its dissolution. As the report indicates, the Allies have still much to learn concerning what should be done to control the power and capacity of Germany to make war. Field investigations of the chemical and common components industries must be undertaken because until now the information available in this country has not been substantial enough to permit final conclusions. The entire program, particularly on scientific disarmament, may need to be tightened after a fresh examination in the light of new developments in the atomic-bomb field. The area of postoccupation limitation and control must be developed more extensively in the light of experience gained during the occupation. Just as some features of the program, submitted earlier through informal channels are already the subject of action in the field and agreement in the Berlin Protocol, so many more features included may have to be developed and considered at the Control Council or diplomatic level. Hence, although realism may call for some considerable changing of the blueprints in response to conditions and circumstances as yet unpredictable, it has seemed incumbent upon this agency, as it is being dissolved, to submit this final report upon the problem it has had under study for a year.

LIMITATIONS OF THE REPORT

In submitting the report, the FEA wishes to make clear that it is not an outline of a complete and general economic program for Germany. Under the terms of the mandate received by the FEA in the Presidential letter, its job was a specifically limited one, namely, to study the measures necessary "to control its (Germany's) power and capacity to make war in the future." In making the present study under that limited mandate, the FEA has been entirely aware that it was dealing with only one side of the coin, namely, the destruction of German military power, while a related but essentially different task, the planning of positive conditions to encourage the development of Germany and Europe along peaceful economic patterns remained to be done. In effect, the FEA program provides an outline for the surgical operations necessary to extract and extirpate the evil growths which have made Germany a force for aggression. The development of a complementary plan or program for the economic and social reconstruction of Germany and Europe along peaceful democratic lines lies still ahead. It will require the same persistent study that has been dedicated to the program of German disarmament.

In any subsequent development of this more positive side of United States policy for European peace, the FEA trusts that one condition will always be underscored—*that, for some decades, the existence of economic power and capacity in Germany which would enable it to wage effective war alone or in alliance with others will be incompatible with world peace and prosperity.*

THE PROGRAM IN BRIEF

CONTENTS

SUMMARY OF FEA PROGRAM FOR GERMAN ECONOMIC AND INDUSTRIAL DISARMAMENT

Page

A. The necessity for internationally enforced economic and industrial disarmament of Germany 1
B. The establishment and execution during the occupation period of a program for German economic and industrial disarmament to be followed through by the maintenance of controls designed to prevent rearmament in the indefinite future 1
C. Military disarmament program 2
D. Industrial disarmament program 3
E. Scientific disarmament program 9
F. Institutional disarmament program 13
G. External security program 14
H. Correlation of disarmament and reparation 19
I. Administration in the occupation period 21
J. Post-occupation control system 22
K. The atomic bomb and its implications for German disarmament 23
Summary table of the application of industrial disarmament measures proposed in the FEA disarmament program 6

STATEMENT IN SUPPORT OF THE FEA DISARMAMENT PROGRAM

A. The historical basis of the FEA program 25
B. Germany's present rearmament potential 27
C. The factors conditioning achievement of an effective disarmament program 29
D. Long-term aspects of the FEA disarmament program 35
E. Economic effects of disarmament on Germany 37
F. Economic effects of disarmament on Europe 39
G. The relation of disarmament to the social and political reconstruction of Germany 40

THE DEVELOPMENT OF THE FEA DISARMAMENT PROGRAM FOR GERMANY

A. Initiation of the FEA study project of German economic and industrial disarmament 43
B. The Yalta Conference 46
C. FEA papers on reparation policy 47
D. FEA's preliminary program of April 15 48
E. Interim policy decisions of IPCOG 48
F. Statement before the Subcommittee on War Mobilization of the Senate Military Affairs Committee 49
G. Completion of TIDC reports 50
H. The Berlin Protocol—Its roots in United States policy and FEA disarmament planning 50
I. Field survey and preparation of final report 61

SUMMARY OF THE FEA PROGRAM FOR GERMAN ECONOMIC AND INDUSTRIAL DISARMAMENT

The following is a summary of the FEA program for German economic and industrial disarmament, which is treated in detail in the report which follows:

A. Necessity for internationally enforced economic and industrial disarmament of Germany

1. International arrangements for the use of force to prevent future acts of aggression must be supplemented in the case of Germany by action designed to eliminate or control its economic and industrial capacity to make war. An essential element in our foreign policy should be to secure the creation and maintenance of all such necessary arrangements.

2. The achievement of German economic and industrial disarmament will require drastic action over a substantial period of time designed to eliminate Germany's power and capacity to make war and, through controls, to prevent its redevelopment. Although Germany is a militarily defeated nation, the economic base of her aggression—the resources, the capacity, the organizing institutions—is still available or can be reconstituted, unless appropriate measures are taken to alter fundamentally the base and orientation of the German war economy.

3. The achievement of security from future German aggression should be the primary and controlling element in our foreign policy toward Germany.

B. The establishment and execution during the occupation period of a program for German economic and industrial disarmament to be followed through by the maintenance of controls designed to prevent rearmament in the indefinite future

1. The achievement of German economic and industrial disarmament requires a period of full-scale military occupation or complete control of the German economy, insofar as its war-making power is involved. Such a full measure of occupation control for a limited period of time is necessary to the establishment and execution of the initial phases of the essential disarmament programs.

2. A military disarmament program, designed to stop the direct production of arms, ammunition, and implements of war, while highly necessary, falls far short of being an adequate measure of limitation on the power and capacity of Germany to make war. Military potential in a total war is a combination of modern industrial, scientific, and institutional components of such a nature as to make them equally useful for war or civilian production. Therefore, adequate disarmament measures must touch and concern not only the direct manufacture of military weapons, but also—

(*a*) The economic and industrial base in terms of facilities and access to materials.

(*b*) The scientific and engineering research and facilities useful for waging war.

(*c*) The economic institutions used or usable for the effective mobilization of the resources for war.

(*d*) The basis for evasion of the internal disarmament of Germany existing in German assets and personnel outside Germany.

3. It should be the principal aim of military government, the occupying authorities, and the Allied Control Council to develop and effectuate these disarmament measures during the period of full-scale occupation and control and provide the basis for the semipermanent maintenance of such controls as may be necessary in the indefinite future. It should be contemplated that, at the end of full-scale occupation and control, such features as the elimination of war plant and excessive war industries and the installation of continuing control measures should have been successfully consummated. Full-scale occupation and control should not be given up until certain assurances of continuing security have been provided.

4. These assurances of peace through a semipermanent German disarmament program should be the subject of agreement between the Allies before they retire from their position of full control of Germany's economic base and should include:

(*a*) The establishment of German governmental machinery of acceptable composition conforming to political determinations of the Allies concerning the necessary degree of decentralization of political authority and the extent of territory to be maintained under German rule.

(*b*) The successful negotiation of agreement between the Allies, covering the details of continuing disarmament which the parties will be committed to enforce, and providing in the event of violation of such conditions by Germany for common action in the form of strict military sanctions. The controls to be maintained would be established by allied authority and not by treaty although acknowledgment of this authority by German governmental machinery should be a condition precedent to withdrawal of full-scale occupation.

(*c*) The establishment of a semipermanent Allied Disarmament Commission fully empowered with authority and administrative machinery to maintain the disarmament plan after the Allied Control Council has retired from a position of responsibility for general control of German affairs.

Such international agreements and the administrative machinery established to enforce them should be so arranged that the nature and degree of controls may be flexible and subject to change. A measure of control deemed unnecessary today may become highly important tomorrow because of technological developments, or a measure of control deemed necessary today may be released at some subsequent time.

C. Military disarmament program (For fuller treatment see sec. I of this report and TIDC projects 1 and 2.)

1. The manufacture of arms, ammunition, and implements of war, including aircraft, should be forbidden, and their importation into Germany barred except for permission to import for police purposes granted by the Allied Control Council. Prohibited items should include those defined in TIDC projects 1 and 2 and discussed in section I of this report, together with any other items that the Allied authorities may, by agreement, include under this head.

2. All facilities specialized for the production of items determined to be within this classification should be removed and the production or importation of additional facilities prohibited. These facilities

should include the 11 categories of plants, 40 specified categories of facilities and equipment described in section I of this report, and such additional items as the Allied control authorities may, by agreement, designate as plants or facilities specialized for war production.

3. Certain auxiliary measures will be necessary, including the elimination of those governmental institutions which organized and maintained programs of military production or war planning and the prevention of their open or disguised restoration. These measures will include:

(*a*) The prohibition of the establishment or maintenance of any department, organization, or agency inside Germany or outside Germany under German control whose practice or purpose it is to plan, design, manufacture, acquire, or operate any arms, ammunition, or implements of war, including aircraft.

(*b*) The prohibition of the appropriation or disbursement of funds to be used for military purposes, including control of the appropriation of funds by the Government for the establishment or support of laboratories, schools, or other institutions which might be devoted to the development of such activities.

4. Special recommendations pertaining to aircraft include:

(*a*) The elimination of all Government agencies or private institutions in Germany or controlled by Germans outside Germany, for the development or execution of plans for the design, manufacture, procurement, or operation of aircraft or components thereof as described in section I of this report and the prohibition of their reestablishment.

(*b*) The prevention of the manufacture, ownership, storage, or operation by the German Government or by any public or private agency under German control, within or outside Germany, of any aircraft or aeronautical training devices or components thereof (except only such operation of civilian aircraft and facilities therefor as are provided below).

(*c*) The establishment pursuant to Allied agreement of international arrangements for the control, management, and operation of all civilian flying in and over German territory and for the control of all ground services for aircraft, the making of flights, both "civilian" and "military," subject to a traffic control organization established by and subject to Allied agreement.

D. Industrial disarmament program. (For fuller treatment see sec. II of this report and TIDC projects 5–19 and 30–32.)

1. The following industries vitally important or useful in war production are to be eliminated or controlled as required by the Yalta Declaration and the Berlin Protocol. (Further studies may require that additional industries be added to this list.)

(*a*) Light metals
(*b*) Petroleum
(*c*) Rubber and rubber products
(*d*) Electronics
(*e*) Antifriction bearings
(*f*) Common components
(*g*) Machine tools and related industries, including abrasives and metal-cutting tools
(*h*) Automotive industry
(*i*) Shipping and shipbuilding
(*j*) The aggregate of the machinery industries
(*k*) Iron and steel
(*l*) Chemical industries
(*m*) Solid fuels
(*n*) Electric power
(*o*) Ferro-alloys, nonferrous metals, and strategic minerals
(*p*) Optical instruments and precision equipment
(*q*) Forest products and forest resources
(*r*) Transportation and communications

2. The targets of the industrial disarmament program are:

(*a*) Heavy industry in excess of Germany's peacetime needs and important for war.

(*b*) Industrial self-sufficiency in materials important for war.

(*c*) German economic and industrial domination of Europe.

(For a full treatment of the historical case supporting the industrial disarmament program, see sec. II, subsec. C.)

3. Five preliminary measures have been incorporated in the FEA industrial disarmament program. These measures are designed to effect an initial substantial reduction of Germany's heavy industry base, which is far in excess of its peacetime requirements, and a prevention of the restoration of any dangerous excess, the permanent elimination of Germany's industrial or material self-sufficiency for war, and the elimination of German economic and industrial domination of Europe and a prevention of its restoration. The affirmative measures chosen to accomplish these objectives are:

(*a*) The complete elimination of certain "key" industries of unusual importance for war or which have been created in Germany primarily for the purpose of achieving industrial self-sufficiency.

(*b*) The reduction of excessive capacity in the industries important for war which are not scheduled for complete elimination.

(*c*) The establishment of industrial controls designed to control the capacity, rate of manufacturing, and exports of the industries important for war which are to be permitted to continue on a substantially reduced scale in the German economy.

(*d*) The removal of plants and facilities rendered useless by the foregoing measures in such a manner as to make them readily available for reestablishment in the countries entitled to claim reparation from Germany.

(*e*) The establishment of a control of the imports and distribution of materials and products highly important in quantity for sustained military or war production operations.

4. The table on page 6 ff. constitutes a summary of the application of the industrial disarmament measures proposed in the FEA disarmament program. The reasons for these proposals and a detailed description of the method of their application are contained in subsections B and D of section II.

Tabular Summary of the FEA Industrial Disarmament Program

Prefatory Note

The following tabular summary covers only one of the five main aspects of the FEA disarmament program, the industrial. It does not cover items of direct military interest nor does it include all the items affected by the industrial disarmament program.

The tables which have been prepared for the convenience of the reader in order to give him a bird's-eye view of the impact of the industrial disarmament program should be studied in connection with the appropriate sections of the text of the report. The reader should also bear in mind that many of the figures in the tables and in the text of the report are estimates based on the best sources available to FEA. While the estimates represent a careful and painstaking study and have been dovetailed with each other in a comprehensive scheme, which represents FEA's best judgment of the quantitative measures to be taken, they are not offered as absolutes which cannot be changed. Indeed, in the case of the chemi-

cals and common components industries the FEA industrial disarmament program includes recommendations for detailed field surveys to provide accurate detailed data not now available. Therefore, any of the figures may be subject to some adjustment in detail, especially in complicated negotiations among the members of the Allied Control Council, without destroying the effectiveness of the program. And, in view of the integrated character of any such program, a change in one part may necessitate adjustments in other related parts. However, the limits on any adjustment should be taken as set by the purposes of the FEA industrial disarmament program which seeks to give practical application to the resolves expressed in the Yalta Declaration and the Berlin Protocol.

Tabular summary of the industrial disarmament program[1]

I. INDUSTRIES TO BE ELIMINATED COMPLETELY AND REBUILDING PERMANENTLY PROHIBITED

NOTE.—Germany to be made dependent on the outside world for essential civilian needs.

1. Abrasives
2. Antifriction bearings
3. Calcium cyanamide
4. Electronics except domestic radio
5. Light metals, raw aluminum, and magnesium
6. Synthetic methanol
7. Synthetic oil
8. Oceangoing ships
9. Synthetic rubber
10. Technical and scientific optical instruments (except civilian cameras)
11. Heavy trucks

[1] This tabular summary does not cover the four other FEA disarmament programs: Military, scientific, institutional, and external security, which have been summarized heretofore.

II. INDUSTRIES WHOSE CAPACITIES ARE TO BE REDUCED AND SUBSEQUENT CAPACITY, RATE OF PRODUCTION, AND EXPORTS CONTROLLED

NOTE.—This program would be maintained for the duration of reparations or a decade, whichever is longer, at the end of which time appropriate modifications would be the subject of negotiation between the Allied Governments.

	Capacity or production for war	Production or capacity for peacetime use to be permitted for duration of control	Capacity to be eliminated as unnecessary for peace	Estimated labor to be displaced [1]	Export controls
Automotive	331,000 units (1937)	90,000 units allowed; 2,500 pounds each, maximum weight.	241,000 units	111,000	Prohibited.
Common components [2]					Strictly curtailed or eliminated, depending on importance of particular item.
Chemical:					
Fixed nitrogen	1,600,000 tons	250,000 tons of nitrogen capacity, only for use as fertilizer.[3]	1,350,000 tons	44,000 for all chemical industries listed herein.	Prohibited.
Nitric acid	970,000 tons per year	Minimum essential industrial uses, as determined in field.	970,000 tons per year, less minimum essential uses.		Do.
Calcium carbide	1,725,000 tons per year	Limited to needs for acetylene gas in excess of acetylene sources—about 200,000 tons per year.	1,525,000 tons		Do.
Chlorine and alkalis (caustic soda and soda ash).	516,000 tons of chloride.	75,000 tons of chlorine per year. No limit on caustic soda or soda ash, but supervision of their use.	441,000 tons		Do.
Sulfuric acid	2,500,000 tons per year.	1,000,000 tons per year (control distribution of sulfuric acid and of pyrites and sulfur).	1,500,000 tons per year		Do.
Primary tar distillates:					
Tar	2,480,000 tons	Capacity limited to amount needed to distill tar from permitted coal-distillation plants under steel program; all plants to be licensed.	All above minimum requirements.		Export or burn any excess over requirements of licensed distilleries.
Benzol	794,000 tons				
Steel ingots and castings	21,500,000 tons per year highest war output rate, but capacity may be as high as 25,000,000.	Rated capacity between 5 and 6 million tons to provide 5,000,000 tons of ingots and castings per year (including carbon steel and alloy steel, latter limited to 600,000 tons, of which no more than 30,000 high alloy).	16.5 to 20 million less amount necessary for reserves and shut-downs.	155,000 in iron and steel.	Prohibited (including ferro-alloys).
Pig iron	16,000,000 tons	Blast furnaces limited to needs for 5,000,000 tons of steel per year and iron-foundry products limited to 900,000 tons per year.	Capacity in excess of that needed for permitted steel and iron foundry production.	110,000 in foundries.	No export controls needed in view of steel program.
Iron ore		Production plus import limited to amount needed for 5,000,000 tons of steel per year, minus scrap consumed.	None		
Fabricated aluminum		Capacity for 40,000 to 50,000 tons per year utilizing no more than 30,000 tons of metal.		18,300	No export prohibition considered necessary in view of production limitation and domestic requirements.

Oil refining	3,100,000 tons per year.	Processing limited to 750,000 tons of crude petroleum per year, mostly from indigenous ores.	2,350,000 tons per year	Small	Do.
Electric power	22,000,000 kilowatts	9,000,000 kilowatts installed (capacity removals from Steinkohle plants).	13,000,000 kilowatts	43,900	Prohibited except during present emergency and thereafter exports to western Europe of not more than 5 percent of requirements of receiving countries permitted.
Fabricated rubber		Processing limited to 30,000 tons of crude rubber per year.		34,300	
Machinery and electrotechnical.	3,200,000 tons in 1936; greatly expanded during war.	1,200,000 tons per year	1,370,000 tons from 1936 capacity—actually much more.	640,000	Permitted under surveillance to prevent domination of any market.
Machine tools	4,000,000 tons of stock	Stocks limited to 500,000 tons; i. e., about 240,000 machine tools; annual production limited to 25,000 tons, about 12,000 tools. License all machine tools.	3,500,000 tons of stock to be eliminated.	82,890, which includes metal cutting.	Export of new tools forbidden; removal of surplus existing stocks as reparation contemplated.
Gage- and precision-measuring tools.			Remove 17 largest precision-measuring tool plants.		Prohibited.
Metal-cutting tools			Remove 15 largest cutting plants.		Do.
Optical glass		Limit capacity to amount needed for domestic civilian requirements.			Do.
Inland shipping and shipbuilding.		Limit yard and repair facilities to capacity needed to provide tonnage necessary for intercoastal and inland waterway traffic.			No ships to be built for export.
Transportation		Remove surplus trackage, rolling stock, repair, and terminal facilities not needed for civilian use.			
Forest products and resources.		Capacity for making chemical and ground-wood pulp to meet civilian requirements or indigenous production, whichever is smaller, plus small operating reserve and capacity for allowed imports.			
Radios for domestic use		Production and assembly facilities for domestic radio tubes, transformers, condensers, resistors, potentiometers, and end equipment permitted. To be concentrated in 1 district and production supervised.			Prohibited.

[1] In terms of 1936 employment.
[2] Field survey to determine peacetime needs; limit production and capacity to that level.
[3] The figure for permitted nitrogen capacity is not an estimate of essential civilian requirements which are believed to be somewhat in excess of this figure. It is contemplated that additional imports for fertilizer uses would be necessary and provision is made accordingly in the FEA import estimates.

III. IMPORTS OF PRODUCTS TO BE PROHIBITED, LICENSED, OR PLACED UNDER SURVEILLANCE

Prohibited	Licensed	Surveillance
Calcium carbide, chlorine, caustic and soda, sulfuric acid, primary tar distillates, forest products with the exception of special wood fiber or pulp required for high-grade papers, alumina and bauxite except for refractories and chemicals, magnesium and metal other than minimum amounts for approved industrial uses, machinery and machine tools (except upon a showing that the needed equipment necessary for peaceful industries cannot be manufactured in Germany), uranium and other radioactive elements and their ores and compounds.	Bearings; nitrogen compounds; nitric acid and synthetic methanol; pig iron; ferro-alloys; iron ore; electronic equipment; rubber (synthetic and natural); liquid fuels; technical and scientific optical instruments; heavy trucks; chromium, manganese, nickel, tungsten, molybdenum, vanadium and their ores and compounds; and abrasives.	Aluminum ingot, steel ingot, optical and opthalmic glass, and a specified list of metals and nonmetallic minerals listed in TIDC Report No. 19.

5. There are three important corollaries of the FEA disarmament program which have not been included in the tabular summary. Yet, in a sense, they are implicit in it and should be clearly understood as contemplated by this report:

(*a*) The establishment of primary and subsidiary administrative measures necessary to the enforcement of the industrial disarmament program which has been outlined. This involves much more than the removal of plants and equipment and requires the substitution of administrative measures of the types suggested in section VIII of this report.

(*b*) A maximum exploitation of agriculture, coal, timber, and natural petroleum in Germany.

(*c*) A speedy determination of the particular plant and equipment which is to be eliminated and the levels of production and capacity which are to be permitted so that the Germans, encouraged by the Allied authorities, may get their peaceful industries back into operation, and production in the restricted industries up to the levels permitted.

6. The effect of the elimination and control measures to be applied to the aggregate of industries usable for war production would be—

(*a*) To make it impossible to produce any substantial amount of arms, ammunition, and implements of war.

(*b*) To make Germany entirely dependent upon the outside world in supplying minimum civilian needs for a selected list of key materials or products also essential to war; to prevent excessive stockpiling as well as experimentation and pilot plant operations in the eliminated industries, and thus to make Germany vulnerable to blockade and to assure that the rigors of economic sanctions will have a maximum effect.

(*c*) To destroy German economic and industrial domination of Europe and, as between Germany and her European neighbors, to reverse the disparity of the war industries aggregate which now favors Germany. To accomplish this objective the elimination of plants and equipment referred to above and other economic programs of the Allies concerning German exports, patents, cartels, and trade arrangements would be so coordinated as to strengthen industrially the other countries of Europe.

7. The FEA program includes recommendations for immediate study in Germany of the chemicals and common components industries in order to permit more definite and complete programs for those industries to be drawn up.

(*a*) The program for elimination of chemical plant here presented is tentative because of paucity of information on German capacity and production in the chemicals complex. A comprehensive survey of capacity and production will be needed as a basis for final determinations, but reparation removals can begin on the basis of tentative estimates herein.

(*b*) The only common components for which a definite program can be offered at this time are antifriction bearings and machine tools. In order that productive capacity in common components may be reduced to peacetime needs a survey must be instituted to determine what removals should be made to avoid ready conversion of surplus capacities and to force German dependence on imports for key components other than bearings. The survey should correlate the long term requirements of the reduced German industrial economy with a census of specialized equipment available for production of key items among which might be—

Asbestos products	Internal combustion engine electrical components
Batteries	Materials handling equipment
Bellows	Mechanical power transmissions
Bushings	Permanent magnets
Cordage	Porcelain products
Electric motors and generators	Pressure vessels
Fittings and unions	Speed changers and gears
Flexible joints and couplings	Springs
Gaskets	Transformers and rectifiers
Heat exchangers	

E. Scientific disarmament program. (For fuller treatment see sec. III of this report and TIDC projects 3 and 4.)

1. *The elimination of certain facilities.*—Facilities, as used here, include all laboratories, testing equipment, proving grounds, pilot plants, model tests, and other physical appurtenances of research in any form. The following is recommended:

(*a*) Close during the initial occupation period all laboratories except those connected with public health.

(*b*) Gather intelligence relating to military research and recent discoveries. Confiscate all plans, test data, and reference material used in facilities listed in (*c*).

(*c*) Eliminate by destruction, or dismantling and removal:

i. Laboratories and installations devoted purely to military research and testing of arms, ammunition, and instruments of war, including aircraft.

ii. Aeronautical laboratories and related equipment such as wind tunnels and appurtenances, training equipment, and testing equipment for all aircraft components.

iii. Laboratories devoted to research on atomic energy.

iv. Test installations for submarine detecting and related communications devices.

v. All underground installations for research or manufacturing, except legitimate, peacetime mining and quarrying operations; and all bombproof structures used for research

or manufacturing except safety structures required in permitted peacetime industrial activities.

vi. All unique testing equipment of special size or type, the absence of which would constitute a bottleneck in military production; e. g., largest sizes of machines for testing of stresses in metals or machine assemblies.

(*d*) Eliminate or, in special cases where such action is considered advisable or feasible by control authorities, convert for use on permitted peacetime research projects:

i. Laboratories which before the war were used for research upon permitted peacetime projects, but were converted to war use.

ii. Laboratories devoted to study of problems related to industries which are to be eliminated, such as synthetic oil or electronics. (See sec. II.)

iii. Laboratories and testing devices related to—

(*i*) Study of all special equipment used in industries to be eliminated such as synthetic oil.

(*ii*) Study of equipment of special size or types, the use of which has been forbidden in industries subject to limitation but not complete elimination, such as the steel industry.

(*e*) Register all remaining laboratories with description of all facilities.

(*f*) License and permit to resume operation all laboratories and research facilities not eliminated under policy of considering:

i. Prior use.

ii. Presence of special equipment.

iii. Projects to be undertaken.

iv. Source of financial backing.

v. Personnel to be employed.

vi. In the case of new laboratories, the existence of similar facilities where projected work could be carried on.

2. *Licensing of research projects.*—It is recommended that all research projects be made subject to a licensing control. Licensing of research projects would include the subject matter of research and testing. Licenses would be obtained from the Allied Authorities before any research work was initiated. No licenses would be issued for study of—

(*a*) Military products or techniques (see items in reports on projects 1, 2, and 4).

(*b*) Aircraft or aeronautics.

(*c*) Atomic energy.

(*d*) Peacetime research projects related to fields from which future secret weapons may be developed. Control authorities may set up a specific list of such projects, related to the following or additional fields:

i. Propellant powders.

ii. Propellants for power.

iii. High explosives.

iv. Radioactive materials, except medical research.

v. Military gases.

vi. Electronics.

vii. Remote control or target-seeking missiles.

viii. Military use of bacteriological materials.

(*e*) Products of industries which are to be eliminated or special equipment necessary to production, such as:

i. Synthetic oil and gasoline.
ii. Synthetic rubber.
iii. Aluminum and magnesium reduction.
iv. Abrasives.
v. Antifriction bearings.
vi. Electronics (discretion to control authorities for license of projects related to manufacture of domestic radios).
vii. Chemicals with special military uses.

(*f*) Equipment of special style and size, use of which may be forbidden in industries where annual capacity is limited (e. g., steel and possibly certain aspects of automotive industries).

(*g*) Products where control of the industry takes the form of limitations of style or use of product (e. g., oceangoing ships).

(*h*) Other products, processes, or equipment in industries where production is not controlled, but Allied authorities believe research activities may prove dangerous as a source of present or future military development.

Special licenses (implying added surveillance) may be issued for research in industries or fields where:

(*a*) Production is permitted, subject to control on capacity or type of products, such as:

i. Coke (related to steel industry).
ii. Chemicals:
a. Fixed nitrogen.
b. Nitric acid.
c. Calcium carbide.
d. Chlorine.
e. Caustic soda.
f. Sulfuric acid.
g. Primary tar distillates.
iii. Chemical wood Pulp.
iv. Machinery.
v. Machine tools.
vi. Automotive.

(*b*) Substitutes or special equipment may lead to—

i. Evasion or avoidance of other industrial controls (e. g., new processes increasing output without increase in rated capacity).
ii. Production of "strategic materials."

(*c*) Other research which, in the discretion of control authorities may be permitted, but is deemed to require more than ordinary control.

Licenses may be granted for research not covered above and should be encouraged in fields related to medicine and public health, agriculture, and social sciences.

Disclosure of results under licensed research should be obtained by—

(*a*) Report of progress and results, and filing of copies of all published material covering discoveries with the control authorities.

(*b*) Continuance of German patent system subject to—

i. Grant of nonexclusive license at reasonable terms to any prospective domestic user of patent.

ii. Free disclosure abroad of all German technical information, patentable or otherwise; and prohibition of German ownership of any foreign patent rights.

3. *Control of finance of scientific research.*—The financing of scientific research and development should also be the subject of Allied control. It is recommended that the regulation imposed on this score:

(*a*) Prohibit use of Government or private funds for direct support or subsidy, in or out of Germany, of military research (including aircraft) and research on all eliminated industries (such as synthetic oil) by:

i. General Staff.
ii. Government war planning departments.
iii. Government laboratories.
iv. Private laboratories.

(*b*) Prohibit Government subsidy of research except in fields related to public health and welfare.

(*c*) Require as part of licensing system disclosure of sources of all financial backing and use of all funds of all laboratories, Government, or private.

(*d*) Require disclosure of sources and disbursements of all funds raised by public collection to aid science and scientists.

(*e*) Consider measures to control size of funds allotted to research in industries where annual production capacity has been limited.

4. *Control of scientific personnel.*—An adequate scientific disarmament program requires effective control of German scientific personnel. It will therefore be necessary to—

(*a*) Register all scientific personnel, including engineers. License all scientific personnel, including engineers, except:

i. Former key individuals in war research.
ii. Former leading Nazis.
iii. Violators of control regulations.

(*b*) Place technical education under the jurisdiction of a scientific and research section of the Allied Control Authority.

i. Forbid all technical education in fields devoted to military studies, aeronautics, and eliminated industries; keep under surveillance teachers of military studies and aeronautics;

ii. Consider future limitation of certain courses in physics, chemistry, and advanced engineering (other than in (*a*)).

iii. Encourage indigenous movements which would tend to decrease over-all numbers of technical and scientific personnel, such as raising of professional standards or closing of surplus technical schools; and reconsider periodically Allied policy toward these ends.

iv. Encourage liberalization of technical education through introduction into curriculum of courses in political and social sciences.

v. Encourage technical education in non-German Europe.

(*c*) Forbid the migration of German scientists and engineers in all but exceptional cases, and subject their foreign travel to particular scrutiny.

(*d*) Prohibit interests in Germany from carrying on forbidden research and, by international agreement, curtail or stop similar

activities of German nationals resident abroad. Accredited foreign scientists should enjoy freedom of travel within Germany.

F. Institutional disarmament program. (For fuller treatment see sec. IV of this report and TIDC project 28.)

1. Military and economic disarmament of Germany must be supplemented by a complementary treatment of the institutions which determine the power and capacity of that nation to make war and to mobilize its resources to that end.

2. Although in total warfare, especially as developed in Germany, every institution, public and even private, is mobilized and aids in the prosecution of the war, certain agencies owe their existence to war and have no excuse for continued existence except to wage war. They should be abolished and their reestablishment prevented.

3. A partial list of official institutions in the economic field which should be eliminated is contained in section IV, chapter C, subsection 1.

4. Excessive concentration of economic power in the hands of a few individuals, which has favored an effective mobilization of Germany's resources for war and, in those hands, a will to a use of those resources for aggression is to be ended. It is recommended that—

(*a*) All combines, trusts, cartels, and cartel-like organizations should be dissolved.

(*b*) Laws and decrees sanctioning or supporting such organizations should be repealed and no law or decree, whether specifically repealed or not, shall constitute a defense in any proceedings against them.

(*c*) No existing cartel agreement of any kind should be recognized as legal, nor any agreement which has the effect of restricting trade.

(*d*) Legislation and decrees which limit the free entry of new firms into industry except as a public franchise in the case of local utility should be repealed.

5. The highly important place which German participation in international cartels has played in the development of its economic war-making power requires the following action:

(*a*) All German participation in international cartels should be terminated immediately. Termination is preferable to suspension, since the latter implies that such agreements will again come into force after the lapse of a period of time.

(*b*) A diligent and painstaking search of company and governmental records should be instituted immediately in order to obtain in Germany and Austria all available information pertinent to German participation in international cartels and ownership of property in non-German countries. Destruction and withholding of such information should constitute cause for severe punishment.

(*c*) Effective diplomatic steps should be taken in neutral and liberated countries to secure similar data, both as a means of checking the material obtained in Germany and Austria and of preventing the deployment of German cartel assets and activities for use in rebuilding the German war machine.

(*d*) A detailed study should be undertaken immediately of each German participant in international cartels in order to

effectuate permanent termination of such activities and to determine the availability of German cartel assets for reparation and for settlement of the property claims of non-German members.

6. To prevent a renewal of German participation in international cartels at the invitation of non-German participants, as after the last war, secret agreements restricting the use of patents, limiting the quantity of production, fixing excessive prices, and allocating world markets, must be terminated by international action. International security demands the adoption of an international cartel convention designed to eliminate all restrictive measures imposed by international cartels and the creation of such international agencies as may be essential to the implementation of the convention.

7. Certain military institutions which have contributed to the mobilization of Germany's power and capacity to make war should be abolished and their reestablishment prevented.

8. In particular, the German General Staff should be completely and formally dissolved and its members segregated from the civilian population of Germany at least by exile, stripped of titles, rank, and status, and prevented from maintaining contact with each other. The German professional officers' corps must be eliminated and measures taken toward—

(*a*) Destroying their elite status.

(*b*) Making communication impossible among high-ranking officers—destroying their group unity and cohesiveness.

(*c*) Prohibiting participation of high-ranking officers in scientific or industrial research.

(*d*) Prohibiting financial relations between heavy industry and high-ranking officers.

(*e*) Breaking up the landed estates of the Junkers and prohibiting government subsidies or financial assistance of any kind to this traditional social group of the military caste.

9. The measures listed above should be in addition to measures imposed upon individuals because of their guilt as war criminals.

10. A partial list of military and related agencies which played an important role as economic institutions in the mobilization of Germany's resources for war is contained in section IV, chapter B, subsection 2. They should be eliminated.

11. A necessary accompaniment to this program of institutional disarmament is a thorough denazification of German economic institutions, private and public, so as to remove from dominant positions in government, industry, trade, and finance those who gave allegiance to the Nazi faith.

12. Finally, 18,000 landed estates (100 hectares or more) must be broken up and subdivided into lots of 10 to 20 hectares for resettlement as family farms. Interim measures of control until the landed estates can be definitely disposed of are recommended.

G. External security program. (For a fuller treatment see sec. V of this report and TIDC project 25.)

1. The problem of security against German aggression is divisible into two geographical parts. The first is the problem of a control of Germans within Germany. The second is that of control in areas outside Germany of the warmaking powers of Germans, their allies and friends, and their assets.

The challenge to the Allies is to prevent the use of resources and personnel inside of Germany and out for the purpose of supporting or aiding aggression. Either through destruction, removal, or control, potentially dangerous German elements in the economic and social structure wherever located must be dealt with effectively if we are to have world security.

2. An external security program, properly designed in the light of the considerations which have been outlined, should be directed to certain well-defined objectives. It should be designed to:

(*a*) Prevent the evasion of the orders of the Allied Control Council in Germany through economic and political activities carried on outside Germany by Germans or their agents.

(*b*) Eliminate German economic and political penetration of areas outside Germany and prevent its restoration.

(*c*) Provide auxiliary controls of the supply of materials, products, and funds to Germany from the outside in accordance with the program of security from German aggression established by the Allied Control Council and its successor agencies.

3. *The necessity for international agreement—the need for a German External Security Council.*—There should be an international organization concerned with the German problem in the external field working coordinately with the Allied Control Council and any successor body in the internal field. This international organization should include not only representatives of the four occupying powers but of other United Nations in whose territories German assets, personnel, and economic activities are of substantial importance. Functioning primarily as a device for securing agreement and stimulating and coordinating action on various facets of the German external security problem, it could work under the aegis of the UNO or function separately. Its chief instruments of operation would be departments and agencies of the governments concerned, holding powers of sanction and enforcement within their own territory. An External Assets Commission for the management, operation, and disposition of enemy enterprises and other assets in neutral or other countries, in conjunction with the Allied Commission on Reparations and the Allied Control Council, would be its principal international operating agency.

This body is referred to herein as the "United Nations German External Security Council." Such a body would complement the functions of the Allied Control Council, providing a convenient medium for correlating the control activities of the occupying powers within Germany, and the other United Nations, concerning not only German foreign trade and financial transactions but also assets and personnel outside Germany.

4. *The necessity for adequate national machinery.*—An external security program requires for its implementation some established and effective national machinery within each nation where German interests have been important. Such machinery at the national level will be needed to insure a proper observance of German external security considerations. For example, some of the matters in our own country involving these considerations are—

(*a*) Resumption of German espionage or propaganda.

(*b*) Disposition of former enemy property.

(*c*) Foreign-funds control.

(*d*) Legislation or executive action against silent German economic warfare, such as that practiced in contractual and cartel arrangements.

(*e*) Repatriation or surveillance of German nationals or former nationals who have been engaged in the support of Nazi or German activities hostile to world security.

(*f*) Utilization of German technicians in industrial or scientific operations important for war.

(*g*) Loans, public and private, to Germany or German interests.

(*h*) Trade with Germany.

The external security program involves more than a dealing with the neutrals; it requires action within the boundaries of the United Nations as well.

5. *The need for adequate investigation of external security.*—The general problem of activating and coordinating investigations of German activities outside Germany by the occupying powers in Germany and by the other countries in which the activities may have occurred is fundamental to the establishment and maintenance of an effective external security program. We must have the facts. Only a fraction of the information, potentially available, is in our hands today. (For a brief summary of the story some of these known facts tell, see sec. V of this report, subsecs. B, C, and D and the TIDC report on project 25.)

6. *The treatment of German foreign assets from the standpoint of external security.*—(*a*) The future disposition of German foreign assets outside Germany should be so handled that the financial, economic, and industrial base of German economic and political penetration or the opportunity for Germans to evade Allied controls in Germany by acts outside is eliminated. The future acquisition of foreign assets by Germany or German nationals should be carefully controlled for the same reasons.

(*b*) A realistic policy regarding German foreign assets will prescribe different methods of treating the problem in—

i. the United Nations

ii. the neutrals, Turkey, and Argentina, and

iii. the former enemy or satellite areas.

(*c*) The treatment of German assets in the United Nations can be handled by an agreement, providing common standards for the administration, liquidation, and disposition of these assets compatible with the interests of external security and reparation, to be executed by each nation through its own internal machinery.

(*d*) The treatment of German assets in the former enemy or German satellite areas should meet two important conditions:

i. All German industriel and scientific equipment specialized for the production of arms, ammunition, and implements of war (see sec. I of this report) should be removed from these areas so as to prevent the perpetuation outside German borders of the base for a German armament industry in either its productive or scientific research aspects;

ii. German ownership and control of all assets in these areas should be eliminated regardless of the identity of the recipient or the disposition of the proceeds.

(*e*) The treatment of the problem of German assets in the neutral countries, Turkey and Argentina, should include the acquisition and

maintenance by the Allies of the attributes of ownership and control, sufficient to enable them to extirpate this economic base of German aggression. The attributes of ownership necessary to this objective must include these three:

i. The effective power to investigate, with the freedom which anyone has in his own enterprise, in order to ascertain the facts with regard to the use of these assets in the past and their possible use in the future for enemy purposes.

ii. To ascertain the most effective practical means, all factors considered, of removing the possibility of such enemy use.

iii. The disposition of the properties in a form consistent with other allied objectives.

7. *The treatment of German personnel abroad from the standpoint of external security.*—(*a*) All German nationals, including Germans who have become naturalized abroad, identified in any substantial way with Nazi or pan-German activities, and possessing scientific skills, or fitted for responsible positions in government, journalism, education, banking, industry, commerce, transportation, or military pursuits, should forthwith be repatriated to Germany. Germans naturalized in recent years should be subject to careful investigations by security authorities in each country to determine whether or not they are genuine refugees.

(*b*) Neutral nationals of German or non-German origin who have violated neutrality laws should be severely penalized. Many nationals of German origin, naturalized before 1939, have worked strenuously, particularly in the economic fields, against the United Nations, and strong penalties should be exacted of them through direct negotiation with the countries concerned.

(*c*) German technical, scientific, and managerial personnel presents a very special problem which is importantly related to the program of economic and industrial disarmament. It does not seem wholly adequate to rely upon the repatriation of known Nazis or persons who acted on behalf of the German state as a complete solution of this problem. Such a measure does serve to eliminate, perhaps, the most menacing aspect of the problem. However, some supplementary controls to limit the employment or use of this personnel in activities they would not be permitted to pursue were they in Germany deserves careful consideration. Regrettably, for some time the right of innocent Germans to engage in unrestricted scientific or industrial operations outside Germany may have to be curtailed because of security considerations.

(*d*) The same general problem arises in connection with the future migration of German personnel. Clearly known Nazis or espionage agents or all others who by reason of their previous record are considered dangerous should not be allowed the normal rights of exit from Germany and entrance to the outside world. Moreover, the restrictions on movements of scientific personnel, described in section III of this report, are also an appropriate part of the external security program.

8. *The treatment of German foreign trade and international financial transactions.*—(*a*) In the industrial disarmament program (see sec. II) several features of the external security program involving foreign trade have been developed. In the institutional disarmament program, the elimination and prohibition of German participation in

international cartels or other similar restrictive contracts or arrangements also has been developed. (See sec. IV.) The successful execution of these features of the disarmament program cannot be assured without the cooperation of nations other than the occupying powers. Indeed, the restrictions on certain selected German exports designed to free the countries of Europe from German industrial domination in industrial categories important for war will be unavailing in the end unless these countries develop their own or alternative sources of supply. Likewise, the exercise of important controls, through border patrols or other arrangements at points of entry in Germany, will be difficult to maintain effectively without cooperation of countries other than the occupying powers, particularly those which border on Germany.

(*b*) These and other measures of external security in the field of foreign trade and international financial transactions will require international agreement through the proposed United Nations German External Security Council and separate arrangements with the neutrals if the greatest measure of security in this field is to be obtained.

(*c*) Achievement of certain objectives should be sought during the occupation period of Allied control. The administration of the export and import control system should be designed to sever the direct dealings between Germany and her former commercial allies until Allied programs for denazification, dissolution of domestic and international cartels, and the control of German assets abroad have been established. Every effort should be made to avoid the perpetuation or reestablishment of old trade patterns and relationships that are hostile to Allied interest. The old German tariff system should be suspended and all of the machinery of economic autarchy employed by the Germans should be eliminated both because it will not be necessary in view of the direct control by the Allies and because its redevelopment in the post-occupation period in any guise is to be deplored.

(A full and detailed description of the various alternative methods of handling this control of German foreign trade is contained in TIDC Report No. 20/27.)

(*d*) Coming to the post-occupation period in which the problem of external security in the field of foreign trade and international finance will be most serious, it is submitted that some form of Allied control of German foreign trade through a permanent disarmament commission, acting in cooperation with a body more representative of the United Nations, will be necessary if disarmament is to be effectively maintained. The Allied controls should include a prohibition of the importation of certain items and limitation of others to estimated peacetime requirements (see sec. II, subsecs. B and D for details) and a control over the export and import of capital. In addition, some provisions must be made either in the peace treaty or in separate agreements for the establishment and continuance of liberal and multilateral trade policies designed to prevent Germany's relapse into the practice of economic autarchy.

9. *The treatment of the neutrals*—(*a*) By far the most difficult phase of the external security problem concerns the treatment of the neutrals and such late cobelligerents with the Allied cause as Turkey and Argentina. German economic penetration and influence was strong in these countries until the end of the war was imminent. This fact, coupled with the known sympathies of many individuals and groups

in these countries with the Nazi cause, creates a set of intangibles that must be faced realistically in projecting the external security program. Problems of national sovereignty of the powers in question are intermingled with the legitimate security and reparation interests of the Allies and the United Nations. A satisfactory solution of the problem is not likely to emerge except through intensive and diplomatic negotiations, marked by care on the part of the Allies and United Nations to respect the legitimate incidents of sovereignty and, in turn, an understanding willingness of the neutrals, Argentina and Turkey, to accommodate their national interests to the international stake in security from future German aggression.

(*b*) Much remains to be done and, in particular, the following:

i. To obtain from the countries in question information concerning the identity and location of German assets within their territories and any other information bearing upon German economic and political penetration.

ii. To obtain an agreement from the governments of the countries in question on the substantive provisions of an external security program in which they are willing to cooperate with the Allies and the United Nations.

iii. To obtain an agreement from the governments of the countries in question concerning the administrative arrangements which they will permit to be followed by the Allies in connection with the treatment of German assets and personnel within their territory.

iv. To obtain their agreement concerning foreign trade arrangements between the export and import control authority for Germany and nationals of their respective territories, including any further exchange of a financial character.

(*c*) The administration and disposition of German assets in the neutral countries, Argentina, and Turkey is not likely to be consummated in accordance with the full interests of security except through the operations of a German external assets commission, established and manned by the Allies and possessed of a substantial authority and operating control of these assets in the neutral countries.

(*d*) Such a commission should be endowed with rights and powers as successor in title and interest to both the German Government and the German property owners and should have adequate technical and engineering personnel, located in the countries where the assets exist. It should proceed to administer and dispose of the properties in question, taking into account the primary security interest of the Allies and, wherever consistent, the local interests of the situs.

(*e*) Should any of the countries in question prove unwilling to cooperate with the Allies in their endeavor to suppress the seeds of another war, the employment of existing sanctions and the development of new ones should be aggressively pursued by the Allies acting in concert until a satisfactory elimination of the German economic base is achieved.

H. Correlation of disarmament and reparation. (For fuller treatment, see sec. VII.)

1. Reparation can and must be used to support and effectuate the policy of disarmament. But reparation can conflict with disarmament if plants and equipment, dangerous or excessive from a security

point of view, are left in Germany to provide for reparation from current output. There must be no shadow of doubt that in the event of conflict disarmament has priority and that reparation should be designed as servant rather than master of disarmament. The preservation of peace for the future at which disarmament is aimed must be preferred to satisfaction of immediate economic needs from German resources.

2. In accordance with this basic principle, reparation should be planned and executed so as to maximize its contribution to disarmament and minimize any obstructive effect.

3. The most direct way in which reparation can be made to serve disarmament is by arranging, as far as possible, for reparation to be made in the form of transfer of plant facilities from German industries that must be eliminated entirely or reduced in capacity to achieve disarmament. If these production facilities are not used for reparation, they must be destroyed. If production facilities are moved to countries where they can be usefully employed, the European economy as a whole will not be deprived of them and the economic balance of Europe will be improved. German economic domination over Europe will be reduced, and the defense potential of other countries will be increased. Reparation can thus make a major contribution toward stability and peace in Europe.

4. Distribution of the available reparations among beneficiary countries should be handled so as to facilitate the achievement of objectives of disarmament. For example, plants of especial military importance should not be transferred to areas within easy access to Germany. In general, production facilities should go to countries most likely to be able to operate them efficiently, either because of past experience or because of economic access to raw materials and markets. Distributions of plant facilities among claimants should also take account of the cartel policy of the United States.

5. Plant facilities will be available for transfer as reparation, not only from direct war industries which are to be eliminated completely but also from industries usable for war production which are to be substantially scaled down and controlled rather than eliminated entirely. The selection of particular production facilities to be used for reparation can be made so as to facilitate subsequent disarmament control of the industry.

6. Thus, both in selecting facilities to be exported and in determining their destination, the ultimate purposes of disarmament can be served and should govern wherever they are applicable.

7. Another field in which reparation and disarmament can easily be made to go hand in hand is that of German foreign assets which provide an economic base for aggression to be eliminated. (See sec. V.) Likewise, they constitute a source of reparation. In this field both the concept and morality of reparation, as well as some of its necessary machinery, may be utilized to confiscate German-owned assets located outside Germany.

9. The method of disposal of German foreign assets for reparation will thwart disarmament if the greatest care is not taken to prevent their falling into the hands of Germans or German cloaks. Selling on the open market to the highest bidder (wherever feasible) may yield foreign exchange for reparation but will not necessarily achieve the objectives of external security. The assets may pass into the

hands of German cloaks either at the sale or at some later date if unrestricted open market sales are used.

10. Finally, reparation in goods from current German output to be produced in Germany in the future must be kept within reasonable limits. Arrangements for reparation of this type require very careful scrutiny to insure that Germany is not given an excuse for reintroducing prohibited industries and rebuilding or maintaining industrial plant over the ceilings which may have been determined as necessary for industrial disarmament.

11. The Allied authorities who draft and execute the reparation program have within their power the most effective tool for the disarmament of Germany. Moreover, they have a mandate from the Tri-Partite Conference at Berlin to eliminate Germany's war potential by the removal of designated productive capacity as reparation. Therefore, it is highly important that by February 1946 operative schedules for plant and equipment removal be completed, that they include the facilities which the FEA disarmament program prescribes for elimination from Germany, and that these removals be speedily executed within the next 2 years, according to the principles of beneficial distribution described above.

I. Administration in the occupation period

1. Section VIII outlines the administrative measures which will have to be instituted by the Allied Control Council during the period of full occupation in order to execute the disarmament program.

2. The discussion of particular administrative measures is suggestive, rather than definitive. A sharp distinction is made between the administration of the disarmament program and the much broader and more complex task of governing German society. It is not necessary to continue all of the manifold tasks of military government in order to execute the disarmament program. Indeed, the more responsibility for the ordinary day-to-day functioning of the German economy that the Allied control authorities can shed, the more time, energy, and personnel they will have to devote to the security or disarmament program.

3. The section also notes the confusion between the demand for reestablishment of German governmental machinery and the abandonment of military government on the one hand, and the relinquishment of Allied ability to control Germany's power and capacity to make war on the other, emphasizing that the former objectives must not be sought or attained in such a way as to weaken our hold upon security from German aggression.

4. In this connection, the importance of establishing, during the occupation period, adequate administrative machinery for the long-term execution of the disarmament program is emphasized. Through the administrative machinery described, it will be possible to maintain a long-term control of Germany's power and capacity to make war without the necessity of maintaining huge armies of occupation, continuing military government, or assuming full-scale responsibility for the internal governance of German society.

5. Indeed, the administrative measures prescribed by the FEA disarmament program can be effectuated by a much smaller body of men—a corps of administrative personnel, including both civilian and military experts, especially qualified by background and training,

backed by a small, highly trained, military security force. This administrative corps should be recruited, trained, and equipped to enforce or execute the following measures:

(*a*) The prohibition of specific industrial, trade or scientific operations;

(*b*) The destruction of proscribed military plant and equipment not useful for reparation;

(*c*) The removal and shipment of plant and equipment or products for reparation;

(*d*) The licensing of industrial plant construction and research;

(*e*) The licensing and quantitative control of certain productive operations in industries where the rate of production is to be restricted;

(*f*) The supervision of the allocation of energy and certain basic materials by the German authorities;

(*g*) The control of exports and imports;

(*h*) The control of such German spending and taxation as may be designed to circumvent the disarmament program;

(*i*) The elimination of cartels and combines and other measures designed to decentralize economic power;

(*j*) The supervision of international financial transactions;

(*k*) The establishment and maintenance of a system of reports, audits and investigations through a non-German trained corps of inspectors, auditors, and investigators so as to provide an independent check upon operations in Germany hostile to the interests of security,

(*l*) The submission to the governments and public of the United Nations of regular reports and other information on the execution and maintenance of a German security program.

J. The post-occupation control system. (For fuller treatment see sec. IX.)

1. A system of follow-through controls to carry on the tasks of disarmament after the end of full-scale Allied military occupation in Germany is recommended. Planning of those controls should begin at once.

2. The controls would be internal, require considerable staff, be closely interwoven with the German administrative and legal apparatus, and be enforced by local as well as international sanctions. They would be administered by a Permanent Disarmament Commission which would be a civilian continuation of the Allied Control Commission and the bearer of undiminished Allied supreme authority over Germany.

3. The controls administered directly by the Commission should be those relating to military, scientific, and industrial disarmament (including import control) and external security. In the execution of the latter program the cooperation of the United Nations Organization should be obtained, but all of the controls should rest on the authority of the principal Allied Powers, be acknowledged in a proper instrument by a valid German Government, and be confirmed by an international agreement among the Allies.

4. The permanent separation of the Rhineland-Ruhr area and the creation of an international trusteeship for its administration is proposed as perhaps the best method of preventing the reconstruction in

Germany of a war industries aggregate capable of once again unhinging the security of Europe. Section X provides a detailed discussion of the administrative character of this trusteeship and problems anticipated in connection with it.

5. If there should be a separation of the Ruhr-Rhineland under a regime of international administration, it will be practical to reduce the strictly industrial controls (as distinct from military disarmament) over Germany to prohibitions of bottleneck items strategically related to the development of a war potential. These would include light metals, abrasives, antifriction bearings, synthetic oil and rubber, electronics, oceangoing ships, heavy trucks, technical and scientific optical instruments, and certain chemicals. By controlling the Rhineland-Ruhr area and utilizing that control properly the Allies could prevent an excessive war industries aggregate from developing in Germany. If the Rhineland-Ruhr area is left under German authority, a continuation of more extensive controls over German heavy industry may be necessary long after the occupation period.

6. To assure the authority of the Permanent Disarmament Commission the organization should be fully endowed with power to carry out its functions, subject to a duty to make frequent and regular reports which should be widely published.

7. Germans will need to be employed in auxiliary administrative jobs, but thought should be taken now for the enlargement of Allied civilian personnel which may be drawn from other countries in addition to the principal Allied Powers for use in tasks of administration and inspection.

K. The atomic bomb and its implications for German disarmament (for fuller discussion see sec. VI)

1. The discovery of the atomic bomb has removed any doubt as to the immediate necessity of putting into effect a disarmament program. The victorious Allies are exerting their energies to develop international controls over their use of this terrible weapon. Under these circumstances, elementary prudence demands the maintenance of international controls in Germany, adequate to prevent the development of this weapon.

2. The military, scientific, and industrial disarmament programs will suffice to prevent German exploitation of nuclear fission in the near future. The special investigations of the German chemical industries and the German common components industries, recommended in connection with the industrial disarmament program, must take into account the importance of these industries for the exploitation of nuclear energy with a view to recommending any additional controls found to be necessary.

3. It is not likely to be seriously urged that an outlawing of the development and use of atomic bombs logically allows the Allies to drop their prohibition of German manufacture of conventional weapons. It will still be necessary to deprive Germany of the power and capacity of developing normal weapons in the quantities needed for modern war.

For one thing, it is far too early to assume that any weapon or class of weapon heretofore useful has been rendered unimportant by the discovery of the atomic bomb. The use of aircraft has revolutionized war; but it has not put sea or land weapons out of date. Indeed,

every war has taught that it is the resourceful and effective synchronization of the use of old weapons with the new that brings victory.

4. Thus the atomic bomb permits no rational escape from the necessity of an international control of Germany's power and capacity to make war, administered by the Allies, and supported by the full weight of international organizations such as the UNO which may be charged with responsibilities for peace and security. All of the vital and necessary paraphernalia of control must be erected, not for any short-term use, but until the nations of the earth can feel that it is reasonably safe to leave it to Germans to make their own decisions for peace or war. That time, we predict, cannot be measured in years but in decades.

STATEMENT IN SUPPORT OF THE FEA DISARMAMENT PROGRAM

A. The historical basin of the FEA program

The peace of Europe and the world depends on security against German aggression. There can be no security, however, until the economic base on which German military might rests is rendered powerless to support war. The Allies' failure to recognize this fact last time made futile their efforts to control Germany's military strength; while Germany's comprehension of the true relation of industrial strength to war potential facilitated her rearmament for World War II.

The treaty after the last war lacked any provisions for an economic and industrial disarmament program. The treaty did place limitations and some absolute prohibitions on the production of direct military goods as well as on the size and make-up of the Germany Army and Navy but for a variety of political and administrative reasons these provisions were never adequately enforced. Even had they been effectively administered, it is doubtful that the Allies would have achieved their objective of maintaining a peaceful Europe because they failed to understand the basic importance of industrial disarmament.[1]

The Germans, on the other hand, were quick to exploit this weakness in the peace provisions. From an examination of the causes of German defeat they concluded that the main weakness of Germany had been in the field of war economics. With typical thoroughness they addressed themselves to repairing that mistake. A new disguised general staff academy was opened up in the Institute of Technology at Berlin-Charlottenburg to which carefully selected army officers were sent for economic and industrial training. As early as 1923, according to Brig. Gen. John H. Morgan of the Allied Disarmament Commission, Germany had developed "that economic general staff which was the dream of Rathenau."

The graduates of that academy directed the reorganization of German industry for the uses of war. They brought the latest advances in technology and production to the knowledge of manufacturers and promoted research in synthetic production to make Germany independent of the rest of the world in fighting the next war. They speeded up development and production of synthetic petroleum; they showed industrialists how to increase production and improve the quality of rayon, rayon staple, aluminum and magnesium, and how to work low-grade iron ore more effectively. They brought about a great increase in the capacity of the machine tool, iron and steel, machinery and chemical industries.

In this reorganization of industry and expansion of its capacity, in the development of domestic resources and of synthetic substitutes

[1] For a fuller discussion of German economic developments in this period see sec. II, subsec. C, and appendix F.

for critical materials, in stock-piling materials that could not be produced synthetically, in the rebuilding of the merchant marine and the creation of an air fleet, in the construction of strategic motor highways, and in the unification and reequipment of the railroads, the General Staff played an important role with increasing Government financial support. In return for collaboration German industrialists received many advantages in the form of freight rebates, tax exemptions, and other favors.

The activities of the German General Staff in laying strong and deep industrial foundations for the next German effort to conquer the world were not carried on inside Germany alone. Economic fifth columns in the form of specialized assets and personnel were set up abroad. This process began immediately after the armistice when the important Fokker Airplane Works were shipped to Holland. German military construction was carried on through cartel arrangements, patent pools and licensing agreements in Sweden, Spain, the Netherlands, Czechoslovakia, and elsewhere. General Staff agents served apprenticeships, even in the plants of the United States, to learn the best production methods.

The German planners of the next war were even able to turn to account the burdens placed upon Germany by the Allies and to make of the cost of the first war a means of financing preparation of the second war. Inflation in the early twenties came very pat to the warlike purposes of the German General Staff and its industrialist allies, in enabling the latter to buy up cheaply control of most German industrial plants.

To rationalize the entire industrial structure of Germany, all that was needed was working capital, which the Allies blindly supplied in the foreign loans which were intended to help Germany finance reparation. The demands of the Allies for reparation in finished and semi-finished goods meant that the Allies had to approve and encourage the modernization of German industrial plant and increased production of heavy goods. This suicidal policy went so far that the Germans were even permitted to export powder and munitions as a means of increasing Germany's ability to pay reparation. Reparation, instead of being an instrument to cripple Germany's power to make war became, in fact, an effective instrument for enlarging that power, the cost of which was borne by the Allies.

German war preparations in the industrial field were capped by manipulation of her foreign trade in such a way as to strengthen Germany's industry and weaken the position of neighboring countries. Cartel arrangements and special manipulation of foreign trade advantages were the main weapons used.

The cartel program as developed before 1933 by the General Staff and the big industrialists, and intensified after that date by the Nazis, called for the manipulation of the world's trade and resources by German industry to the advantage of Germany's industrial war economy. Two of the fields in which cartels achieved particular success were aluminum and magnesium. Through the operations of the aluminum cartel Germany was able to increase its purchases of French bauxite and alumina and limit the expansion of French production of finished aluminum. After the outbreak of World War II, France, the United States, and Great Britain found themselves with far less aluminum production than they needed.

Thanks to the cartel arrangements made by I. G. Farben, the United States and Great Britain also found themselves inadequately equipped to produce magnesium after the outbreak of war. For many months after Pearl Harbor the United States had to use thermite instead of magnesium, although thermite is not nearly so suitable for incendiary bombs as the longer-burning magnesium.

The system of cartels not only brought important economic and industrial advantages to Germany but also gave much more direct and effective access to military developments abroad than any spy system. Moreover, it actually enabled Germany to carry out a program for the industrial disarmament of the powers which had defeated her in World War I.

The Nazis, on coming to power in 1933, stepped up the tempo of foreign-trade manipulation for the purpose of strengthening Germany's power to make war and weakening the defensive position of her potential enemies. Weaknesses remaining in Germany's industrial armor were strengthened. The Nazis saw to the building up of adequate stock piles of raw materials essential to war and not available in sufficient quantities through domestic production. From 1934 to 1938 German imports of such materials increased in ominous proportions, and the two principal exporters to Germany were the United States and the United Kingdom. Imports of iron ore, for example, rose by 165 percent, of bauxite by 260 percent, and of chrome ore by 130 percent. During the same years total German imports increased less than 10 percent. Through a variety of techniques in addition to cartel arrangements—subsidies, foreign-exchange control, bilateral and clearing agreements—the Germans were able to import large quantities of raw materials and products needed for war in return for exports which imposed the slightest possible burden on her domestic rearmament production program. By 1939 Germany had not only built up her stock piles of strategic materials against the possibility of blockade; she had also assured herself of a continual inflow of these vital materials of war through the dominating economic position she had achieved over the supplying countries, particularly those in southeastern Europe.

Under the Nazis the program of industrial rearmament was brought to full fruition. The ties between Government, the major owners of industrial combines, and the German General Staff were drawn ever closer. The Nazis supplied the political ruthlessness necessary to destroy the groups and institutions still hostile to total mobilization for war and to galvanize for action the militarists and industrialists. Under the Nazi aegis final preparations were made for realization of the long maturing plans to make Germany the military ruler of the world. A national war plan was blueprinted in detail, and economic resources, capacity, and organization—the entire economic life of the German Nation—were turned to the purposes of war production.

B. Germany's present rearmament potential

The FEA disarmament program takes its cue from German economic developments during the last 25 years and from the residue of those developments.

Although today Germany is militarily defeated, and its economic life is temporarily at a standstill, the industrial base of its aggression—the base which it built up over the last 25 years and which enabled

it nearly to conquer the world—is virtually untouched. With industrial capacity, technological and scientific organization, and economic assets owned outside Germany, and an integrated control of a highly centralized economy, Germany is still a potential threat to the safety of the rest of the world.[5]

The possession by a nation of a large installed stock of machine tools constitutes a major element in war-making capacity, outweighing the military potential of population numbers. In 1939 Germany had a machine tool inventory and a machine tool building capacity larger than that of the United States which had almost twice Germany's population and a much more highly mechanized civilian economy. Even after making allowance for damage and obsolescence Germany has probably more than 4,000,000 tons of machine tools together with a vast undamaged capacity for new machine tool production.

This huge machine shop is based, in turn, on an iron and steel capacity which on the eve of war produced about 23,000,000 tons of crude steel, or more than twice as much as in 1930. Practically all the great iron and steel furnaces of Germany are ready for operation or can be put in operation with minor repairs. The same condition, with minor variations, exists in other industries—chemicals, electric power, aluminum, electronics and electrical equipment, and optical instruments—which produce for war as well as for a peacetime civilian economy.

In addition, still relatively intact or easily repaired, are strategic industries, such as rubber and oil, which were developed in Germany in order to make it impregnable against blockade during the war.

The ability of German industry to produce far more than the needs of a peaceful civilian economy must be considered as a threat to peace. Given an opportunity to repair the worst of the damage, Germany could set in motion within a fairly short time most of the industrial plant which in 1944 turned out a record volume of arms and ammunition for the German army.

Throughout the war and particularly during the last few years the world has had ample evidence of Germany's technical ability to perfect old and produce new weapons and materials through organized technological research and development. German scientific achievements were the results of careful organization and ample financing of research institutions—private, military, and Government—in which great numbers of highly trained and specialized scientists working under optimum conditions invented and developed to governmental order weapons to enable Germany to win world supremacy. The pilot plants, the laboratories, the research institutions, and the highly skilled technical personnel, plus the organization which integrated all scientific activities are still present in Germany and, unless prevented, will renew their work in the service of the German militarist ideal.

Located outside the physical borders of Germany is one of the most important components of its capacity to wage war. It consists of the properties presently or formerly owned by Germans, together with a wide variety of economic and trade activities which constitute a transmission belt supplying the materials necessary to the achievement of

[5] See appendix F for a fuller discussion.

German economic and military objectives. These external assets which were purposefully built up under Government supervision have been of paramount importance in the development of Germany's war machine.

The problem of Germany's external activities presents two aspects which should not be confused: (*a*) The removal from Germany and concealment in various foreign countries of funds, loot, and key industrial technicians and organizers; (*b*) less dramatic, but infinitely more important from the point of view of effective German disarmament, the existence of German investments in long-established and reputable business properties and concerns and of long-term business relationships in the world of commerce and trade that often take the form of private trade agreements or cartels.

With the defeat of Germany these assets take on the same kind of significance they had immediately after the last war. Unless proper steps to root them out are taken by the Allies, they may again serve to further a future German aggression.

It is axiomatic that no nation can develop a capacity to make total war without coordination and integration of those industries and institutions which plan, direct, supply, and serve the armed forces. Germany's General Staff, big industrialists, and Government became particularly aware of this fact after the experience of the last war. As a consequence the planners for a new German aggression developed control machinery which reached into every section of the country and affected its economy, its social and political institutions, and its science. The Germans have become accustomed to that kind of control and will surely return to it unless appropriate steps to destroy the pattern are taken by the Allies.

The interests of the industrialist managers of the German economy require the maintenance of the essentials of such a controlled economic system. There is already ample evidence to show that they are seeking to keep it basically intact. Owners and managers of factories are attempting to persuade Allied authorities that German industrial capacity is indispensable to meet the crying needs of liberated Europe, and therefore that no obstacles should be put in the way of full utilization of this capacity. Much the same tactics were used by the Germans after the defeat of 1918, when they succeeded in getting the wheels of German industry rolling again.

The FEA disarmament proposals have been prepared against this background of history and the present danger of German aggression. They would eliminate Germany's economic power and capacity to wage war by a fivefold system of military disarmament, scientific disarmament, industrial disarmament, institutional disarmament, and control of Germany's external economic relations. The FEA program, in other words, is based on the conclusion that the surest way of preventing a misuse of power by the Germans is to see to it that they have no substantial power to abuse.

C. The factors conditioning achievement of an effective disarmament program

To achieve the objectives of the FEA program for the disarmament of Germany a number of conditions must be met. These conditions were developed in the interim report on German disarmament issued

by the Enemy Branch in January 1945.[1] These conditions are restated here in brief. German disarmament must—

1. *Take precedence over all other policies for the treatment of Germany.*—If there is a conflict with other economic considerations, primacy must be given those measures which prevent Germany from rebuilding and perpetuating the power to make war.

2. *Be implemented in full.*—An adequate disarmament program cannot be limited to a prohibition of the direct production of war material but must remove the general economic and industrial base for the conduct of modern warfare.

3. *Be lasting in concept and character.*—A successful disarmament program must be designed for effective operation and execution for a substantial number of decades ahead. The objective is a disarmed Germany in 1976 as well as in 1946.

4. *Be correlated with the development of European economic and industrial independence of Germany.*—A concomitant of German economic and industrial disarmament, properly conceived and executed, is the establishment in Europe of a balanced economic structure which will be able to defend itself against exploitation and dominance by an overpowering Germany.

5. *Be developed and understood as a measure of security and not as a device for punishment and retribution.*—There must be no interference in the economic life of Germany under the guise of disarmament beyond what is reasonably necessary to prevent Germany from repeating its past aggressions. This is not to preclude a reparation program based upon the principle of compensation for damage due to German aggression, so long as it is labeled as such.

6. *Be utilized to hasten the conversion from war economy to a healthy consumer economy.*—A program for industrial and economic disarmament effective for security purposes can also become the means by which the German economy is reoriented to meet the consumer needs of the German people rather than the war madness of their leaders. In the long run the German people will be far better off if German resources are used to support higher standards of living for Europe and the German people instead of the inhuman demands of war.

7. *Be flexible.*—An effective program must be adapted to technological changes and to new forms of industrial and economic activity.

8. *Be possessed of a maximum of administrative feasibility and simplicity.*—Complicated and detailed economic controls are practical during the period of occupation. In the long run administrative simplicity will be a major factor.

9. *Be simple and easily understood by public opinion.*—The peoples of the United Nations as well as those of Germany must be brought to appreciate the importance of the disarmament program in preventing war in the future, a cause in which peace-loving Germans have as much interest as the rest of the world.

There are no short cuts to the disarmament of Germany. The only effective plan will be an integrated program, broad in its sweep, precise in its details, capable of easy and unambiguous enforcement, and simple enough to be understood and accepted readily by the peoples of the Allied nations.

[1] See appendix A.

There is no longer question of whether a program of industrial disarmament should be applied. That matter was settled in the Berlin Protocol, which provided an admirable statement of general principles and policies. But there has as yet been no determination of the best means of carrying out the announced policy.

Many types of programs have been suggested by Americans striving to arrive at the best means of effecting the disarmament of Germany. That so many thoughtful analyses have been presented is an encouraging sign. The American public has been kept awake to the essentiality of firm measures and it has had an opportunity to see the complexity of the problems involved.

Former Secretary of the Treasury, Henry Morgenthau, proposed a program over a year ago, calling for drastic measures of deindustrialization by the complete elimination of all German heavy industry; his recent book, Germany is Our Problem, provides a more detailed exposition of the measures he advocates. Dr. Harold Moulton and Dr. Louis Marlio, in The Control of Germany and Japan, published by the Brookings Institution, recommended the elimination of a few "selected key industries," a reduction of steel capacity, and control of the electric-power industry from outside the German border. Presidents of five leading engineering societies presented a somewhat similar proposal to the Secretary of State in 1944. More recently the national engineers committee of the Engineers Joint Council released a report on Industrial Disarmament of Aggressor States, which suggested detailed measures for eliminating or controlling dangerous industries. James B. Conant, president of Harvard University, explained his views in an article in Life magazine. And Bernard Baruch publicly urged that a detailed, specific "industry by industry" plan be developed.

All these have served admirably to focus attention on the need for elimination or control of German industry, but none has presented an adequately detailed and integrated program. FEA has had the advantage of the careful thought of these and other persons, and of industry studies made by the TIDC committees. Concentrating on the specific as well as the general, and concerned to present a program which would be effective, workable, and enduring, FEA has found that many of the theories of industrial disarmament were inadequate in themselves and that a combination of measures would have to be adopted. We cannot trust any of the cure-alls.

Some of the most important conceptions of industrial disarmament which FEA believes must be rejected as inadequate are mentioned below. This discussion high lights the weaknesses of the concept of one solitary technique and the comparative strength of the selective combination of measures proposed in the FEA disarmament program.

(*a*) *Elimination of a few key industries.*—The basis of many theories of industrial disarmament is a belief that elimination of a few industries particularly strategic for the development of a war potential would be sufficient. This theory is based on a too narrow conception of the relation of a modern economy to war potential and an inadequate estimate of the difficulty of evasion. It must be rejected.

To limit the program to the elimination of a few "key industries" would not be to provide an effective "limitation on the power and capacity of Germany to make war" and hence would not satisfactorily

carry out the Berlin and Yalta decisions. If such a program were adopted, Germany would be left with an overexpanded aggregate of industrial war power in many fields, and German ingenuity would simply be challenged to develop substitutes, or to obtain alliances with those who could fill the economic chinks in her armor. We would be basing our measures on present technology and ignoring the speed of technical change. Modern war is too complicated and modern technology too resourceful for us to look hopefully to such panaceas. The future peace of the world would hang upon too few and too slender threads if this approach alone were accepted. However, the idea of "key industries" which should be given special attention is accepted by FEA, since complete elimination of certain industries is recommended as part of a broad program for the reduction of industrial capacity.

(*b*) *Control of German foreign trade.*—Other proposals assume that firm controls upon German foreign trade would suffice to prevent Germany from obtaining materials essential to a war program. Such controls appear to be simple. Yet, they would leave in Germany the economic base for rearmament. This base could be utilized quickly whenever some political development made it possible for Germany to procure adequate raw materials from the outside or produce them from her own resources by the development of substitutes through technological wizardry or highly subsidized home development. Control of imports would be difficult to make wholly effective, especially if there were a struggle for foreign markets, and any relaxation might easily open a way for rearmament.

Moreover, a control limited to imports, if it is to be fully effective, would require far more control of Germany's internal economy than may appear at first sight. All industries requiring imported materials would have to be brought under a control system that would be both detailed and complex. Foreign trade control would also inevitably involve intervention in the operations of traders all over the world. Thus, control of foreign trade is too narrow and unstable a base for reliance as a sole answer to the problem. If the more dangerous sectors of the German industrial system are suppressed or reduced, foreign-trade control can be an important part of the program, as it is in the FEA proposals. But taken by itself it does not even touch the fundamental issue: Whether or not Germany is to be allowed to retain and maintain a high industrial war potential.

(*c*) *The separation of territory.*—A political separation of blocks of territory from Germany has also been suggested as an alternative to a full-fledged disarmament program. It has often been suggested that the detachment of the Rhineland and the Ruhr would provide adequate security from German aggression, since it would deprive Germany of the rich coal resources in that area. But this device alone would not constitute an effective means of industrial disarmament. There would remain in truncated Germany a vast war industries aggregate and reserves of brown coal, iron ore, and the major reserves of lead and potash. Many strategic industries with capacities developed far in excess of peacetime requirements would provide an industrial basis for a potentially powerful military nation. Although the truncated area might lack the economic means to support a major war, its resources might permit military aggression on a scale sufficient to recover the detached areas and other bordering territory. If the industrial

capacity of the detached areas were permitted to remain at overexpanded levels developed in preparation for war, they would offer a tempting target for German repenetration by political, economic, and military means.

The FEA disarmament plan would, however, include the separation of territory if certain safeguards were taken. (See secs. IX and X.)[4] Prior to actual separation, direct war industries, as well as excess industrial capacity, would have to be removed from the area in line with the industrial disarmament and reparation programs laid down for all of occupied Germany. Separation of this territory would not be considered as an alternative or substitute for the elimination or control of Germany's industrial capacity for war; the proposal for its use as an ancillary measure is posited on the assumption that excess industrial capacity in war industries throughout Germany will first be removed. Its chief value would lie in its effectiveness as a postoccupation control measure. By permanently eliminating from German control the area of highest concentration of German war potential, a separation of territory will facilitate postoccupation control of rump Germany and introduce a greater measure of security into the total disarmament program.

(*d*) *Complete elimination of German heavy industry.*—It has been proposed that all German industry useful to a war potential be eliminated. If Germany were to be "deindustrialized" and forced into an agricultural status, it is argued, security would be certainly obtained. Various modifications of this point of view have been ably presented, and the reasons for its rejection in favor of a combination of partial deindustrialization and control must be clearly explained.

Some of the premises upon which advocates of deindustrialization base their argument are incontrovertible, and are bases of the FEA program. German heavy industries are overexpanded beyond any legitimate needs of the civilian economy; some of these industries of a key character have no appropriate place in the German economy except for war or are not suitable subjects for control because of their technical characteristics, and hence must be eliminated; the other heavy industries need to be substantially scaled down unless a dangerous industrial war potential is to be allowed to Germany; in addition to the capacities which have been added for the prime purpose of rearmament, other capacities were added pursuant to a German plan to achieve economic and industrial domination of Europe through cartels, export subsidies, and various devices of economic penetration. In all these spheres, deindustrialization is essential.

To that extent the FEA agrees with the program advocated by Mr. Henry Morgenthau. But after careful study, the FEA concluded that it was neither feasible, desirable, nor necessary to carry the program of deindustrialization to the extreme apparently proposed, i. e., the complete extinction of heavy industries in Germany.

Admittedly, the difference between the industrial disarmament program proposed in this report and that advanced by the former Secretary of the Treasury is one only of degree. However, on this difference of degree rests the prospect that the results achieved will be

[4] For complete and detailed factual examination of the problems of the detachment of the Rhineland-Ruhr area see TIDC report on project 22.

enduring. FEA contends that any plan based upon the complete and continued suppression of the heavy industries in Germany will fail eventually.

To refuse Germany the limited heavy industry allowed by the FEA program would compel it to import many additional items if the peaceful industrial economy contemplated by paragraph 12 of the Berlin protocol were not to pass into final eclipse. Yet the estimated costs of just a few of these essentials to industrial operations, such as steel, heavy chemicals, machinery and machine tools, would be in excess of 3,000,000,000 reichsmarks per annum. It would be impossible to procure the foreign exchange necessary to purchase those heavy industrial products and materials in addition to the other essential imports required by this program. Without access to these products, Germany's peaceful industry could not expand or even survive. The only recourse would be agriculture. An analysis of Germany's ability to absorb former industrial workers on the land indicates that many additional millions could exist only by means of highly uneconomical subsistence farming.[6] By following paragraph 11 of the Berlin Protocol in limiting, rather than destroying all the heavy industry, the FEA program would achieve the objective of industrial disarmament, but leave Germany the wherewithal for sustaining a peaceful economy, capable of self-support.

To suppress completely all German heavy industry implies one of two courses, either of which would be ineffective in the long run. One is that the Allies will by force of arms keep Germany forever deindustrialized. Whatever the wisdom of taking such drastic measures, it is highly unlikely that American public opinion would firmly support the measures necessary to keep Germany in such a condition.

The other possible course would be for the Allies to perform the initial destruction or removal of heavy industry and then to withdraw from Germany, abjuring any responsibility for or control over the further development of the German economy. This course would be clearly self-defeating. However, drastic the destruction of the German industrial plant and however onerous the conditions within Germany, the German people would eventually find a way to recover their former power.

The development of the atomic bomb has fortified this position. To walk away leaving Germany in a relatively uncontrolled state in the atomic-bomb era would be to invite disaster. Immediate elimination of German heavy industry might have provided a decade or two of security from the old German heavy industrial war aggregate, without the burden of long-term controls. But the new age of weapons presents us with a challenge to control, whether we like it or not. Today the answer to the problem of German industrial disarmament must inevitably be a combination of elimination and control measures. The Allies must continue to control Germany's war industry.

The FEA plan includes as parts of an over-all mosaic, those programs which have been suggested as single solutions. It does not and cannot rest exclusively on any one of them. It avoids unnecessary extremes. While recognizing that the economic and industrial

[6] TIDC project 23, prepared by a group of agricultural experts under the direction of Mr. Herbert Parlatus, Director of the Office of Food Programs of the FEA.

structure of Germany must be changed to prevent a resurgence of aggression, it does not seek to eliminate every economic activity that might contribute to war. To eliminate them all would be to eliminate the German Nation, something which no one has proposed as a proper measure of disarmament.

The FEA program has been drawn up in the light of the best available analysis of the economic base of Germany's power and capacity to make war. On the basis of that analysis the program sets up selective controls over all the economic, scientific, and institutional activities essential to aggression, but leaves the German people ample leeway to engage in activities necessary to their welfare.

In summary, the FEA program would pacify rather than destroy the German economy. It would redress the economic balance in Europe distorted by German policies in the past, and would pave the way for a healthy German consumer economy. Its multiple controls would lay a broad base for the future peace of the world and by the flexibility of its provisions it would be always abreast of technological development which may render obsolete specific means proposed on the basis of present knowledge. It is administratively feasible. It is simple enough to be explained to and understood by the peoples of the world. Finally, it is realistic in relying, in the case of Germany, not upon agreements to eschew aggression or upon the ability of the countries to meet force with greater force, but upon the removal of the means of new German aggression.

D. Long-term aspects of the FEA disarmament program

The FEA disarmament program is designed to prevent Germany from waging war at any time in the foreseeable future. It has been framed to be effective not only during the period of occupation but also after a reconstituted German Government has been allowed to take over the duties of ruling the country. As long as these measures remain in effect, Germany will not have the ability to build up a war potential. In addition, the firm implementation of the program, when coupled with other measures, should succeed in eliminating the German will to war.

The steps by which the ability of Germany to make war will be eliminated are clear, and their effects are predictable. A large part of its industrial base for aggression will be eliminated during the initial period of occupation by removal of plant and equipment from its war industries aggregate. The separation of the Ruhr-Rhineland, permanent elimination of certain key war industries in the truncated Germany, and continued control and adequate surveillance over all industrial activity important for war and over imports and exports, will make it possible to prevent Germany from ever again threatening the peace of the world. Postoccupation controls have been so designed as to be simple of administration and as to be readily supported by the peoples of the United Nations. It should be possible to maintain them without difficulty for many decades.

It is important, however, that disarmament measures be aimed at eliminating the German will as well as German ability to make war. We do not wish to have to maintain controls in perpetuity. There is always a chance that, as a result of popular pressure or of disagreement between the various countries, the measures of supervision will be relaxed. When our guard is down, Germany could begin again to

build up a war potential, unless a broad-gaged program has been put into effect to reduce the likelihood that Germans would again seek in aggressive war a means to improve their lot.

German willingness to engage in programs of military conquest arises from various elements in German social, economic, and political life which combine to produce a state of mind readily conducive to war-like activity. Germans have accepted war as a major instrument of national policy and have glorified the military life as an expression of national virility. They have allowed to the military profession and to the classes most closely associated with it, a prestige disproportionate to their function as agents of national defense. They have stressed the virtues of obedience, submission to authority, and the subordination of the individual to the state. Thus it has been an easy matters for their leaders to canalize discontent and feelings of inferiority into programs of aggression.

It will not be an easy matter to change the German frame of mind, and real results cannot be expected in the course of a few years. German education must be transformed to inculcate the democratic and international rather than the authoritarian and the nationalistic spirit. German political institutions must be reshaped to encourage individual responsibility. German society must relax its emphasis on status in a fixed hierarchy. These things cannot be accomplished during a few years of occupation, nor can they be imposed from without.

In formulating a program for economic and industrial disarmament, FEA has been thoroughly aware of the complexity and the intangible nature of these problems. It insists that its program must be supplemented by an educational program aimed at extirpation of the German will to war. But it also insists that a program of reeducation would not in itself provide adequate security. We are not skilled enough in techniques of propaganda to rely upon such a frail reed. However, concrete economic action which will prevent Germany from again waging war will also have a real influence in persuading Germans of the futility of ever again undertaking a program of military conquest.

The FEA program recommends that heavy industry removed from Germany in order to reduce its war potential be so distributed to other European countries that the old German industrial domination will no longer exist. Once the other countries have been given capital equipment and have had time to put it to work, they will have a head start which should be discouraging to any German dreams of reviving the former German economic position in Europe. The economic balance of power is to be altered, and with that alteration will inevitably come a shift in the balance of military power. That should help weaken German desires for military conquest.

The will to war is something that has to be stimulated, to be aroused to action. The FEA program includes measures for the abolition of those groups in Germany which did most to stir up military sentiments and ambitions. Without the German General Staff and their allies, the leaders of heavy industry, the chief focus of military propaganda will have been removed. With the break-up of the centralized economic power held by the heads of the huge German cartels, the industrial drive for war orders will no longer exist.

The alteration of the industrial pattern of Germany will do more than merely remove from positions of industrial authority those men

formerly most interested in the initiation of military programs. It will force a reorientation of the German economy from an emphasis on heavy industry and the production of capital equipment to an emphasis on the consumer goods of light industries. Such industries could not be the spearhead of a German attempt to regain industrial domination of the Continent. The leaders of these industries would not desire—indeed, it would be to their interest to oppose—an industrial rearmament program. And the very ferment and flexibility forced by such a radical change in the industrial structure of the country might well lead to greater economic and industrial democracy.

Most important of all, the firm application of a strong industrial disarmament program will itself serve as education for the German people. Here will be concrete proof that the other nations mean what they say when they announce that they will never again tolerate German aggression.

The first lesson in reeducation was taken when the Allied Powers announced, at the Crimean Conference, that it was their—

> inflexible purpose to destroy German militarism and nazism and to insure that Germany will never again be able to disturb the peace of the world.

The second part of the lesson will come with our implementation of the program. The Potsdam communique expressed the Allies' unequivocal determination to disarm Germany industrially. Delay or half-heartedness in carrying out this announced program would persuade the Germans that they might again be successful in circumventing the measures imposed on them and that they could look forward to the day when they could rebuild their industrial war machine. Effective action by the Allies to prevent the resurgence of aggression will cement Allied unity and compel the Germans to explore peaceful ways of pursuing happiness and getting along with their neighbors on a reasonable basis rather than develop new techniques based on the principle of "divide and conquer."

E. Economic effects of disarmament on Germany

In the long run, the disarmament program should prove beneficial to the Germany economy. The Germans will gain economically when they no longer devote a considerable proportion of their labor and other resources to making weapons and maintaining a large military caste. They will gain also when they are no longer persuaded to make uneconomic use of their resources for the sake of being economically independent of other countries.

These benefits will not be apparent in the immediate future. Germany has lost considerable resources in the areas east of the Oder-Neisse Rivers. The industrial machine left in the truncated area is damaged. To set it going again at peaceful pursuits will involve time, labor, and capital. Then Germany must make reparation to her victims and will be expected to defray at least the internal costs of occupation. As a consequence of these factors which are attributable to the war and quite apart from the effects of disarmament, the German standard of living will inevitably, and for some years to come, be lower than it was before the war.

By the terms of the Berlin Protocol, security from German aggression in the form of disarmament is to have priority over all other considerations in determining Allied policy for the treatment of the German economy. This injunction clearly requires that no industry, industrial segment, or industrial plant which has contributed or could be

made to contribute to the development of a German war potential should be retained in Germany to produce for reparation, to supply the occupying forces, or to pay a part of the costs of occupation. While these are legitimate claims against the German economy, they must be adjusted within the framework of a coordinated program which gives primacy to security yet allows for the settlement of other demands. Thus, reparation out of current production and industrial output to supply or pay the costs of the occupying forces would not be disallowed, but would have to come from industrial plants which could safely be allowed to operate within Germany.

Because disarmament measures are to have primary consideration, they may be blamed for the hardships and difficulties the Germans will have to face in the months and years ahead. For this reason, Germany and the rest of the world should be led to distinguish clearly between the impact of the disarmament program and the effects of other factors which would be present even though no systematic attempt were made to disarm Germany.

The FEA disarmament program provides for the complete elimination of all industries having a purely wartime significance. It provides further for a reduction in the capacity of those heavy contributing industries which have been greatly expanded in support of a war machine. In only a few industries essential to a genuinely peaceful economy does the program call for a limitation of capacity below the level necessary to supply the needs of the German population, and in these instances it makes provision for imports of the proscribed products. The impact of these measures should be little more severe than the effect in any country of changing from an economy geared to total war to one committed to normal peaceful pursuits.

On the constructive side, the program proposes the encouragement of economic activities of a relatively safe nature, to provide employment opportunities for German workers hitherto employed in the proscribed industries or returned to Germany from the separated Oder-Neisse area and from other countries to the east, and to produce for export that Germany may obtain imports of food and raw materials not available within her own boundaries. Agriculture could be expanded to some extent, as could forestry and fishing. The reconstruction of German homes, public buildings, and transportation systems will for many years absorb great numbers of workers and give impetus to such contributing industries as woodworking, cement, plumbing fixtures, glass, and home furnishings. Germany could expand its production of coal for export and for the manufacture of many types of products, such as plastics, which under proper surveillance, would not present a serious menace to the objectives of security. The manufacture of consumer goods would offer additional opportunities for employment and would simultaneously provide either the German people or the people of Europe (via exports) with comforts and conveniences which have largely been denied them during the prewar and war years. Still further opportunities would be opened by the restoration of small business and handicraft shops by which many Germans made a living before the war but which were heavily sacrificed to the demands of the wartime economy.

Facilities will remain within the heavy industries to permit the development of such activities as these, which should enable the Germans to achieve better than a minimum standard of living. It is

estimated that around 1950 German production which would be permissible under this FEA program would create a balanced foreign trade, with exports and imports in balance at about 3.2 billion reichsmarks. While this would represent a considerable reduction both in exports and imports from the prewar level, it would allow Germany more than is necessary to fill the minimum requirements of its population. One of Germany's greatest import needs will be for food. It was not self-sufficient in foodstuffs before the war and is not likely to develop self-sufficiency within the near future in view of the loss of significant agricultural areas in the east and an increased population. According to FEA estimates, trade of this magnitude will allow food imports sufficient to provide a per capita daily diet of about 2,800 calories.

The extent to which Germany should be permitted the quantity of exports and imports or standard of living possible under the FEA disarmament program is not the subject of recommendation in this report. That will be a derivative of the determination of the extent to which nonwar plant and equipment or current production is utilized to defray occupation costs or reparation claims under the Berlin Protocol. In other words, it is not the position of this report that the standard of living possible under the FEA disarmament program should be permitted to the Germans. It is our position that this better than a minimum could be provided if it was determined that it did not violate the Berlin Protocol requirement that the German standard not exceed the average of the other European countries.

Reparation and the costs of occupation will probably absorb production above the minimum needs of the German population for some time to come. Once these claims are settled, however, agriculture and peaceful industries can be made to produce for the full benefit of the German people. There is every reason to believe that, at the end of the reparation period, Germany will be able to raise continually its standard of living by enjoying the products of its expanded "peaceful" industries. It will then become apparent that the disarmament program has entailed changes no more drastic than would have been made by Germans seeking to set up an economically efficient system directed toward genuinely peaceful ends.

F. Economic effects of disarmament on Europe

Europe now faces a difficult period of reconversion and economic reorganization. This cannot be avoided, though the severity of these after effects of war can be alleviated by immediate aid in the form of food, materials, and equipment to help the people of Europe get on their feet again. Europe cannot hope to regain its prewar standard of living until the destruction of war has been repaired. To restore substantially the same old economic organization with Germany holding a position of dominant power would be to invite a renewal of disaster and would in the long run be far more costly than the FEA program of preventing German rearmament and freeing the other countries of Europe from German economic domination.

Under the program, the industrial plant and equipment proscribed for Germany as directly useful for war or as excess capacity capable of supporting a German war effort are to be removed to other countries, where they can be put in operation and protected against German competition until they can stand on their own feet. The

resulting European industrial expansion, particularly in heavy industry, will appreciably advance the necessary economic reorganization on which European economic independence from German domination depends.

German economic dominance in Europe was not a result only of relative industrial magnitude. It was built up over a long period of time through a variety of methods and devices for the manipulation of trade, principally cartel arrangements, which allocated territories, fixed prices, set production and sales quotas, regulated exports and imports, and restricted the use of patents. Acquisition of ownership or control of physical properties and other assets in many countries permitted Germary to organize important industrial segments abroad to serve its own interests. The prevention of such trade practices and the repatriation of economic assets, as provided in the FEA program, will assist in development of industry and trade in other countries and insure against German interference in their development.

Perhaps the greatest contribution disarmament can make will be to free the other countries of Europe from the burden of competitive armament imposed on them by the fear of German aggression. Freedom from fear will allow them to turn the use of their resources toward the improvement of the living standards of their population. From this Germany will benefit along with the rest of Europe.

The final effect should be a larger and freer movement of goods in international, as well as European trade, and a sounder economy and ever-rising standards of living throughout the Continent.

G. The relationship of disarmament to the social and political reconstruction of Germany

The FEA disarmament program is a limited set of measures designed to accomplish a limited objective, the elimination or control of Germany's physical capacity to make war. This, however, is only part of the much larger problem of American policy toward Germany. It is assumed that the ultimate goal of that policy is a reconstruction of German society and its economy, and a change in the attitudes of its people so that a peaceful, cooperative role for the German people in the society of nations under their own responsibility will become possible.

FEA sees its disarmament program as an essential part of the larger program. Physical security against aggression is essential to the political order into which a peaceful Germany as well as other nations must fit. This has moral as well as pragmatic implications. Our determination not to permit a recurrence of German aggression is an affirmation of the moral order of international society on behalf of which we have fought.

But the far-reaching changes which will have to be brought about in German society if this goal is to be achieved cannot be accomplished by disarmament alone, though it is an essential step in the total program. A brief statement of its relation to the other aspects will assist in evaluating the significance of disarmament.

In connection with the consequences of the military defeat the disarmament program will operate somewhat in the manner of a surgical operation. It will break up and eliminate or drastically reduce all the principal facilities on which Germany's capacity to make war has been based.

Any such drastic and relatively sudden change in a society is a serious shock to the whole system. There are two kinds of possible consequences. First, though in and of itself it does not eliminate all the roots of German military aggression, it does go deep enough to shake up and unsettle much of the social structure, breaking up its more firmly crystallized features and thus reducing resistance to a thoroughgoing reconstruction.

At the same time, however, such a shock may serve to activate sentiments in defense of the old order. The dominant immediate reaction of most Germans to defeat and occupation has been one of apathy and disillusionment with the regime which has brought it on them. With recovery from this immediate state, however, there is likely to be a wave of revived patriotism which could easily crystallize into a powerful movement for revival of German military power and all the institutions associated with it.

Hence, the problem of the larger social and political consequences of the disarmament program has two main aspects. First is that of taking advantage of the shaking up which the "surgical operation" will have administered to the militaristic aspects of the social system, so that these immediate effects can be made to lead into profounder changes by the pressure of other longer term policies. Secondly it is a question of the minimization of the reactions in defense of the old order which, if they grew too powerful, might block the desired process of reconstruction, and leave continued forceful repression the only recourse.

The most important institutions which have contributed to German militarism have over a long period been dominated by the members of powerful privileged social groups with a securely established position in German society and a long tradition. The most essential general condition of a thorough elimination of militarism is to break the hold on German society of these groups and their patterns of value. Only when this has happened will there be an opportunity for new groups to emerge into positions of genuine leadership.

The FEA disarmament program constitutes an important step in this direction. By eliminating the military establishment it will deprive very important elements in that privileged group of the most important career opportunities they have traditionally enjoyed. This will greatly weaken their position of influence if it is continued long enough to force their sons into altogether peaceful pursuits and create a vested interest in them. If at the same time the economic basis of the Junker group in the Prussian landed estates is undermined, the results will be far reaching.

Similarly the dominant "governing class" of the German economy has been the leaders of the great firms and cartels of heavy war industry centering in the Rhineland and Ruhr areas. The removal of substantial quantities of heavy industry, the breaking up of the cartels, and the reduction of the size and relative position of the great firms of heavy industry will do much to break the monopolistic control of these groups over the economy as a whole.

In themselves these measures are not enough. In the early Weimar era the same elements were at least partly displaced from privilege and influence, yet they were able to come back. This time the elimination must be much more thorough, and positive opportunity must

be provided for new groups to acquire and consolidate positions of leadership. It is difficult to foresee just what groups these may be—trade-unions, smaller business, professional groups, etc. But the fundamental change cannot be accomplished by disarmament alone. Disarmament will be a major factor in opening up the opportunity which must be exploited by other policies with positive aims.

The same is true in other areas of German life which unlike the economic are not very directly touched by disarmament as such: Education, political organization and civil service, religion. The way in which these develop will have a profound effect on the total balance of German life, and hence on the continuing success of the objective of disarmament.

It should not be assumed that the severity inherent in the disarmament program will necessarily in net effect make the elimination of the German will to aggression more difficult by arousing resentment. The resentment is very likely to appear, but it can be counteracted by other effects of the policy, in combination with other measures. Disarmament as a dramatic expression of Allied determination to prevent future aggression should have salutary effect on the Germans in the long run if it is firmly adhered to.

Furthermore, the disarmament program calls for concentrating the most seriously restrictive measures against the German economy within a brief period. It is a period which, because of the disorganizing effects of a lost war, is bound to be frustrating for them so that the additional burden of disarmament need not be very great.

The hope is that within a relatively short period it will prove possible to establish a definite base line within which the Germans can first achieve a tolerable measure of economic security and from which they can look forward to a process of steadily advancing economic development in peaceful directions. Revival of the old war-oriented economy will be blocked by continuing controls, but the German people will have definite hope for economic betterment and achievement.

A prolonged period of large-scale unemployment, especially if it could plausibly be attributed to Allied "interference" with German economic recovery, would provide an ideal breeding ground for just the sort of nationalistic revival we most wish to prevent. It is exceedingly important to take all feasible measures to prevent this, and, once the "surgical operation" is completed, to permit and stimulate economic recovery and progress in Germany along "peaceful lines." Only a people who have some security and some hope for the future are likely to be capable of the kind of national will which will be necessary if Germany is again to take her place in the peaceful commonwealth of nations.

THE DEVELOPMENT OF THE FEA DISARMAMENT PROGRAM FOR GERMANY

The FEA program for German disarmament is not a hastily improvised plan. It has been developed over a period of a year of intensive study of the problem, which included organized effort of not only the FEA Enemy Branch but of several hundred experts in various departments and agencies of the Government who were enlisted by the FEA in its study projects. Representatives of the branch had the benefit of nearly a month in Germany as observers "on the ground" of the problems involved. The development of the general policies and principles on which this program is based and of the program itself, has been a somewhat evolutionary process. It is the purpose of this section to outline briefly the various stages in the development of this program up to the present.

A. Initiation of the FEA study project of German economic and industrial disarmament

The directive to FEA from the President to accelerate studies of German disarmament came in the wake of a good deal of public comment on the conflicting nature of various generalized approaches to the problem of a postwar treatment of Germany. None of the general formulas advanced seemed to be generally acceptable; proponents of so-called "pastoralization" could not find common ground with those who thought in terms of the limited patterns of the Treaty of Versailles.

Hence, the FEA set about to collect available information and studies concerning the German war economy so that a workable approach to the problem might be made. A considerable number of basic analyses of the German economy had already been prepared in FEA in connection with its economic warfare functions. Other studies had been carried on by FEA and OSS at the request of the War Department in connection with various programs, such as long-range bombing, the denazification of the German economy and economic institutions, and the continuing appraisal of the enemy war potential for military purposes.

As the information and studies previously prepared were collected, it became apparent that no solid body of analysis and program for German economic and industrial disarmament was in existence and that many aspects of the problem would require detailed study far beyond the exclusive competence of any single agency. A concentrated cooperative effort was required to apply all the resources available to the Government, including the experience gained in the development of our own war economy, to a consideration of this problem.

After a series of consultations with representatives of the Department of State, the FEA prepared and submitted to the President an interim report on Study Projects Related to German Economic and Industrial Disarmament, dated January 10, 1945. This report

emphasized in particular the importance of fully developing the concept of economic and industrial disarmament to cover not only the traditional confiscation of finished weapons but also the physical facilities and institutions on which military power is based. It stressed the proposition that to limit Germany's power and capacity to make war involved necessarily the elimination or control of many industries which are useful both for the production of arms, ammunition and implements of war and for the supply of normal civilian requirements; it described the specific relations of a number of such industries to the national war effort in the light of our own experience in the United States; it posed a number of questions which those relations raised for the development of any specific and concrete program of economic and industrial disarmament.

The interim report urged that this general problem be broken down into 27 specific study projects (later increased to 31). It proposed that these study projects be undertaken by a series of interdepartmental working parties under the direction of the FEA or by the staff of the FEA Enemy Branch where interdepartmental treatment was not required.

The interim report outlined policy assumptions, worked out in cooperation with the Department of State, necessary to give direction to these studies. These included the general assumptions that in the making of the peace the Germans would not be left free to maintain or reestablish their war-making capacity; that for many years to come it would not be possible to rely on the emergence of a peacefully inclined Germany; and that positive measures for German economic and industrial disarmament should be instituted and maintained for a considerable period by international arrangement.

In addition to these general premises the series of study projects was grounded on certain more specific assumptions which were stated in the interim report as follows:

(*a*) That the production of armament, munitions, and implements of war should be prohibited and the facilities therefor removed, converted to other useful production, or otherwise eliminated.

(*b*) That the German aircraft industry, military and civilian, should be wiped out.

(*c*) That it might be desirable to eliminate certain key industries or segments thereof, essential to war, with the result that minimum essential civilian needs in Germany for the products of the selected industries, to the extent that they were to be supplied, should be supplied from external sources.

(*d*) That it might be desirable to limit or regulate certain industrial and economic activities and/or exports so as to prevent a reestablishment of an aggregate of German industrial power threatening to the peace of Europe, or resulting in German domination of the European economy.

The titles of the study projects which were undertaken are listed below:

Project 1. The Post-Surrender Treatment of German Industry Involved in the Production of Armament, Munitions, and Implements of War.
Project 2. The Post-Surrender Treatment of the German Aircraft Industry.
Project 3. The Post-Surrender Treatment of German Engineering and Research Related to Armament, Munitions, and Implements of War (Including Aircraft).

Project 4. The Post-Surrender Treatment of German Engineering and Research in the "Secret Weapon" Field.
Project 5. The Post-Surrender Treatment of the German Light Metals Industry.
Project 6. The Post-Surrender Treatment of the German Oil and Petroleum Industry.
Project 7. The Post-Surrender Treatment of the German Rubber and Rubber Products Industries.
Project 8. The Post-Surrender Treatment of the German Radio and Radar (Electronics) Industry.
Project 9. The Post-Surrender Treatment of the German Bearings Industry.
Project 10. The Post-Surrender Treatment of the German "Common Components" Industries (Exclusive of Bearings).
Project 11. The Post-Surrender Treatment of German Machine Tools Industries.
Project 12. The Post-Surrender Treatment of the German Automotive Industry.
Project 13. The Post-Surrender Treatment of the German Shipbuilding Industry.
Project 14. The Post-Surrender Treatment of the Aggregate of the German Machinery Industries.
Project 15. The Post-Surrender Treatment of the German Steel and Ferro-Alloys Industries.
Project 16. The Post-Surrender Treatment of the German Chemical Industry.
Project 17. The Post-Surrender Treatment of the German Coal Industry.
Project 18. The Post-Surrender Treatment of the German Electric Power Industry.
Project 19. The Post-Surrender Treatment of Strategic Minerals for German Industries.
Project 20. Appraisal of Alternative Devices for the International Import Control Into Germany of Supplies, for Which, for Security Reasons, That Country May Be Made Dependent Upon External Sources.
Project 21. Technical Requirements for a Permanent Allied Commission.
Project 22. The Economic Consequences of a Separation From Germany of the Rhineland, and/or the Ruhr, and/or Areas East of the Oder River.
Project 23. The Post-Surrender Treatment of German Landed Estates and the Practice of Economic Autarchy in Food Products.
Project 24. An Appraisal of the Technical Potentialities and the Development of "Peaceful" Industrial Activities in Germany for Both Home Consumption and Export.
Project 25. The Need for and Nature of Allied Activities Relating to German Property Assets, Industrial Personnel, and Economic Activities Outside Germany, Designed to Enforce Economic and Industrial Security Measures Pertaining to Germany.
Project 26. The Post-Surrender Treatment of German Participation in International Cartels Affecting International Security.
Project 27. The Post-Surrender Treatment of German Foreign Trade Consonant With Economic and Industrial Disarmament Considerations. (Later combined with Project 20.)
Project 28. The Post-Surrender Treatment of Economic Control Institutions in Germany: A Study of Private, Semipublic, and Public Organizations of Economic Control, From the Point of View of International Security.
Project 29. Historical Analysis of the German Will To War.
Project 30. Post-Surrender Treatment of German Forest Resources and Forest Products Industries.
Project 31. The Post-Surrender Treatment of the German Optical Glass and Technical and Scientific Equipment Industries.
Project 32. The Post-Surrender Treatment of the German Transportation and Communication Industries.

Excerpts from the interim report of January 10, 1945, giving a rationale of the projects and describing some of the questions raised are reproduced in appendix A.

The interim report recognized that effective economic and industrial disarmament would require specific programing in five fields: Military disarmament, which would include the scrapping not only of finished products but also the plants and facilities specialized for the production of arms, ammunition, and implements of war (see

projects 1 and 2), scientific disarmament (see projects 3 and 4), industrial disarmament (see projects 5–20 and 30–32), institutional disarmament (see projects 26 and 28), external security (see project 25). At its inception, the study project also contemplated long-term controls of Germany's power and capacity to make war by a permanent Allied Disarmament Commission and by territorial detachment where there were unusual concentrations of productive facilities and resources. (See projects 21–22.) Finally, it should be noted that the study project included an exploration of the potentials for the development of the German economy in fields of agriculture and peaceful industries. (See projects 23 and 24.)

A series of interdepartmental technical industrial disarmament committees was established in accordance with the recommendations of the interim report. They consisted of members chosen, as appropriate in each case, from the State, War, Navy, Interior, Agriculture, and Commerce Departments, the War Production Board, the War Shipping Administration, the Office of the Petroleum Administrator for War, the Office of War Mobilization and Reconversion, the Office of Scientific Research and Development, the Office of Strategic Services, the Tariff Commission, the Federal Power Commission, the National Advisory Committee for Aeronautics, the National Academy of Sciences, the Combined Production and Resources Board, and the Combined Raw Materials Board. (A list of the technical industrial disarmament committees and their membership is attached as appendix D.)

The committee members were not expected to act as official representatives of the views of their respective agencies but served in their individual capacities as specialists in various fields related to the disarmament of Germany. Their recommendations would carry weight in proportion to their individual reputations and the respect paid their personal opinions. Nevertheless their access to the information and thinking on these problems available in the agencies from which they were drawn added greatly to their ability to reach ir formed and sound conclusions. Private individuals with outstanding qualifications and experience were employed as consultants by FEA and gave extremely valuable assistance to the committees.

The FEA enemy branch provided administrative assistance and direction to the committees and aided them with analytical personnel wherever that was required. For some of the study projects, FEA undertook full responsibility for the preparation of the factual material and recommendations.

B. The Yalta Conference

Sometime after the study project outlined above had been initiated, the heads of Government of the United States, Great Britain, and the USSR met at Yalta. On February 12, a communique issued at the conclusion of the Conference, now known as the Yalta Declaration, confirmed some of the major premises on which the study project was based and established an agreement in principle that Germany must undergo a process of effective economic and industrial disarmament. The communique read:

> It is our inflexible purpose to destroy German militarism and nazism and to insure that Germany will never again be able to disturb the peace of the world. We are determined to disarm and disband all German armed forces; break up for all time the German general staff that has repeatedly contributed to the resurgence

of German militarism; remove or destroy all German military equipment, eliminate or control all German industry that could be used for military production * * * and take in harmony such other measures in Germany as may be necessary to the future peace and safety of the world. It is not our purpose to destroy the people of Germany, but only when nazism and militarism have been extirpated will there be hope for a decent life for the Germans and a place for them in the comity of nations.

This announcement, coming when it did, gave considerable emphasis to the FEA sponsored technical industrial disarmament committees and gave a new impetus to agency participation in the study projects which had been undertaken.

C. FEA papers on reparation policy

The Yalta Declaration also had announced agreement on the proposition that Germany must be made to pay reparation in kind. The FEA Enemy Branch had realized earlier that the achievement of German economic and industrial disarmament would be largely dependent upon the manner in which the reparation problem was handled. Therefore, when initiating the study project outlined above, the Enemy Branch undertook a series of corollary staff studies designed to develop preliminary principles for the handling of reparation that would complement rather than interfere with the disarmament objectives of the Allies.

A series of informal memoranda dealing with this relation was submitted by the Enemy Branch to the United States member of the Allied Reparations Commission in Germany in late March 1945, shortly after the creation of that office.

These memoranda stressed the close relation between disarmament and reparation and the necessity of conforming the reparation program to disarmament objectives by avoiding excessive reparation from current production in the heavy industry categories. This principle became basic to United States policy. The major American concern with the reparation program was that it should not conflict with the objective of security against German aggression and result in maintaining or rebuilding the structure of a potential German war economy as had happened after World War I.

These informal memoranda also urged that reparation be used as a positive tool for the achievement of disarmament objectives and, in particular, that German plant and equipment in important war-making industries in excess of that needed for the German peacetime economy be removed as reparation. It was emphasized that reparation in the form of plant and equipment particularly valuable for war would help to impose upon the German economy the necessary security limitations. It was observed that the transfer of such equipment to European countries would assist them to develop their own industrial structure and make them less vulnerable to German economic and industrial domination, particularly in the industries important for war.

Copies of these informal memoranda submitted to the United States Reparations Commission on March 31 are contained in appendix B.

Following the formation of the American delegation to the Reparations Commission, the FEA Enemy Branch with the assistance of its technical industrial disarmament committees, was asked by the United States member to prepare for his staff a detailed analysis of the plant and equipment potentially available in Germany for removal as reparation. A comprehensive summary of the available information

on existing German capital equipment in certain specified industries was prepared by the Enemy Branch with the technical industrial disarmament committees, although the short time available prior to the departure of the delegation made extensive analysis impossible. The report, entitled "Preliminary Studies of Reparations from Selected German Industries," dealt in detail with the existence and location of excess capacity in various industries and its movability and relationship to raw materials. It was presented on May 18, 1945, approximately 1 month after it had been requested.

D. FEA's preliminary program of April 15

In March 1945 it became apparent that the progress of our armies was such that Allied governments would shortly be confronted with the necessity for dealing with Germany, or at least with a large segment of the German economy. Accordingly, the FEA Enemy Branch undertook to develop some tentative conclusions of a general character on German economic and industrial disarmament so that they could be reflected in interim policy decisions which seemed necessary. It prepared a preliminary program for German economic and industrial disarmament for current working and planning purposes. The Foreign Economic Administrator submitted this preliminary program informally to the Secretary of State by a letter dated April 15, sending copies to the Secretary of the Treasury, Secretary of War, and Secretary of the Navy. These Departments, together with the FEA, were represented on an Informal Policy Committee on Germany, which at the direction of the President, had been instituted in March by the Secretary of State to develop a policy for Germany.

There is attached as an appendix a copy of this FEA preliminary United States program for German economic and industrial disarmament. (See appendix C.) In submitting it, the FEA stated:

> This tentative program is based upon a series of intensive studies of this subject which the Foreign Economic Administration presently is conducting in response to a letter from the President of September 29, 1944, directing that such studies be prosecuted. Any final conclusions and programs on this subject should be based upon the studies referred to after they have been completed, submitted, and reviewed by the appropriate high-level policy authorities. In the meantime, certain preliminary action is necessary in the light of potential long-term objectives.
>
> If this statement or one substantially similar to it, is adopted, it will constitute an outline of policy on which United States officials can be directed and guided to undertake a course of action necessary to an ultimate execution of a full-fledged program of German industrial disarmament and demilitarization. It will also provide some basis and direction for the negotiation of agreements upon such a program with the appropriate representatives of the other nations, which is an indispensable factor.

E. Interim policy decisions of IPCOG

The Informal Policy Committee on Germany (IPCOG) which had been established in March undertook to develop during the month of April agreed directives to cover military government in Germany in its early phases and the general negotiations on reparation. The FEA was represented on this Committee by the Director of the Enemy Branch and on the working subcommittee by various members of the Branch's staff.

FEA's representatives sought in particular to bring to the policy discussions the outline of a definite economic plan to achieve security against German aggression. They used the text of the FEA proposed

preliminary United States program for German economic and industrial disarmament, as the basis of their participation in the drafting sessions of the Committee. They emphasized the necessity of incorporating in the basic directives instructions which would permit appropriate United States military and civilian officials to take action and to negotiate a general arrangement with the Allies for the initiation of a disarmament program, paving the way for a later and more fully developed execution, and at the same time not losing any opportunity to forward the development and execution of such a program.

It was possible, under the circumstances, to define United States policy in general terms. The provisions of the Military Government Directive, Joint Chiefs of Staffs No. 1067, as revised, now published (see appendix E), were a major step toward the development of a full and detailed program of economic and industrial disarmament. It incorporated the general principles upon which such a program would have to be executed in the interim period for which the policy was being devised. The fundamental importance of the disarmament program was emphasized, and the general concept of security from German aggression as primary in United States policy objectives was accepted.

Similarly, the general principles regarding the relation of disarmament and reparation, stated previously, were adopted in the reparation directive.

F. Statement before the Subcommittee on War Mobilization of the Senate Military Affairs Committee

On June 26, 1945, the FEA presented extensive testimony and exhibits to the Subcommittee on War Mobilization of the United States Senate Committee on Military Affairs. This testimony, submitted at the request of Senator Harley M. Kilgore, chairman of the committee, provided a public discussion of the facts concerning the German economic base for aggression. It constituted the first overall public statement dealing with the various facets of German economic and industrial disarmament and was designed to provide thorough factual background for the task ahead. The main statement was divided into four parts:

Chapter I. An Appraisal of the Present German Economic Base for Aggression.

Chapter II. The Inadequacy of the Disarmament Provisions of the Treaty of Versailles.

Chapter III. The Economic and Industrial Rearmament of Germany for World War II.

Chapter IV. Some Observations on the Task of Developing a Program for German Economic and Industrial Disarmament.

A copy of the summary statements on these topics presented by H. H. Fowler, Director of the FEA Enemy Branch, on behalf of FEA Administrator Crowley, to the Senate committee, appears in Appendix F. Attached to this statement was a series of exhibits, dealing with the German penetration and domination of various European industries and the extent and nature of German assets and economic activities outside Germany. They are reprinted in part III of the Hearings before the Subcommittee on Military Affairs pursuant to Senate Resolution 107.

G. Completion of TIDC reports

By the end of June 1945, most of the technical industrial disarmament committees had completed their discussions and outlined their proposals. Each provided a technical analysis of a specific German industry or aspect of the German economy, from the standpoint of its importance for war. Each recommended measures which, in terms of the particular industry under consideration, would provide the safeguards necessary to prevent Germany's waging effectively a modern war. Although each committee worked by itself on its own problem, its conclusions were not reached in complete isolation. It was recognized that Germany's industrial economy is a closely integrated whole, and that substantial changes in one segment would have important consequences for other segments as well. It was also recognized that the continued operation of segments of many of the industries under study or imports of the products involved would be necessary to a legitimate German peacetime civilian economy. The FEA staff working with the committees undertook to provide frequent cross-references among them.

The TIDC analyses and conclusions have been circulated to all the agencies of the Government concerned with the development and execution of policy for Germany. Early in August the Director of the FEA Enemy Branch and several advisers together with representatives of the War and Navy Departments, undertook a special mission to Germany to deliver the TIDC reports and consult with General Clay and the staff of the United States group in the Allied Control Council regarding the over-all disarmament program. They delivered copies of the TIDC reports in mimeographed form to the appropriate officials of the USGCC in Frankfurt and Berlin, and reviewed with them the analyses and recommendations of these reports.

This delivery of copies of the TIDC reports in mimeographed form to the officials of the United States Group Control Council was timed so that they were received by that body only 10 days after the agreement at the Potsdam Conference had delegated to the Allied Control Commission the fundamental job of executing in a specific, detailed, and concrete fashion the principles of economic and industrial disarmament agreed to at Potsdam.

Copies of the reports on the 31 projects in the TIDC series are being printed and many are now available in printed form.

H. The Berlin protocol—its roots in United States policy and FEA disarmament planning

On August 3, the decisions of the Potsdam Conference were announced publicly in the so-called Berlin protocol. (See Appendix G.) The Berlin Protocol laid a basis of agreed Allied policy and principles for the treatment of Germany in the initial period of occupation. The text of the Protocol represented a major achievement for the American negotiators, who had won acceptance of the United States position on most of the fundamental questions of disarmament and its relation to the reparation problem. The protocol itself was clearly based on the United States directives on military government and reparation, referred to previously, which had been prepared by the Informal Policy Committee on Germany, which, in turn, incorporated many of the general principles of disarmament planning which the FEA had developed in its "Preliminary United States Program for

German Economic and Industrial Disarmament," originally submitted in April. (See Appendix C.)

Since the Berlin Protocol now provides, for the Allies, a framework of agreement for a comprehensive and fully effective disarmament program, it must not be forgotten that, as such, it embodies policy originated in the United States to serve the long term security interests of the United States. Lest the origin of these principles be misunderstood, it is important to spell out how and in what particulars the Berlin Protocol carries forward the United States economic security program. Other interests conflicting with our long-term security may interfere and may be skillfully played upon by Germans, their spokesmen, or those unmindful of the tremendous price the United States has paid for this peace. Such interests as reparation, trade, and relief and rehabilitation needs may cut across the interests of long-term security and must be appropriately reconciled. To devise policies, procedures, and arrangements to be worked into a lasting but flexible agreement of the nations concerned to insure appropriate measures for German economic and industrial disarmament, may require difficult and complicated negotiations. Hence, it is highly desirable that there should be a full understanding of the origin of these principles in our own policy proposals.

It is easy to trace the development of the principles of the Berlin Protocol on disarmament from the FEA proposed "Preliminary United States Program for German Economic and Industrial Disarmament," originally submitted in April, through the basic United States Military Government Directive ASC 1067 as revised, to the Berlin Protocol. All these documents are set forth in full in appendixes C, E, and G.[1] Except for certain provisions of the FEA proposed preliminary program which had to do with policies and principles which properly were not a part of the initial decisions, this program has become adopted United States policy and the subject of international agreement at Potsdam.

Set forth below, section by section, is the FEA proposed "Preliminary United States Program for German Economic and Industrial Disarmament," of April 15, and a discussion of its treatment in the basic United States policy directive and the Berlin Protocol. (Matter below consists of paragraphs extracted from the preliminary program.)

1. *Security—Primary United States objective in treatment of German economy.*—The economy of Germany shall be directed, controlled, and administered in such a way as to eliminate or control all German industry that could be used for military production and take in harmony such other measures in Germany and with reference to German assets and activities outside Germany as may be necessary to the future peace and safety of the world.

Whenever consistent with this primary objective, the measures undertaken to achieve it shall take into account:

(*a*) The provision of facilities for, and contributions to, the maintenance of the occupying authorities.

(*b*) The provision of equipment, goods, and services to Allied Nations for restitution and reparations.

(*c*) The leaving of an opportunity for the German people to achieve a minimum standard of living.

(*d*) The pursuit of the foregoing objectives in such a manner as to contribute substantially to the establishment of a healthy economic life in both Europe and the world.

In case of any conflict in objectives, the elimination or control of Germany's war-making power shall take precedence over all other considerations.

[1] Appendix C, FEA's Preliminary United States Program; appendix E, the Directive to the Commander in Chief Regarding Military Government to Germany, appendix G, the Berlin Protocol.

Paragraph 4 (*c*) of the "Directive to Commander in Chief of the United States Forces of Occupation Regarding the Military Government of Germany" (hereinbefore and hereinafter called Military Government Directive) confirmed the propositions set forth in section 1, above, that security from German aggression should be the primary United States objective in the treatment of Germany and that the program of industrial disarmament and demilitarization was an essential element in this security program. It was clearly stated that "The principal Allied objective is to prevent Germany from ever again becoming a threat to the peace of the world," and that essential steps in the accomplishment of this objective included "The industrial disarmament and demilitarization of Germany with continuing control of Germany's capacity to make war." Paragraph 16 of the Military Government Directive contained a mandate to the effect that "You will impose controls to the full extent necessary to achieve the industrial disarmament of Germany."

Paragraphs 4 (*d*) and 5 (*a*) of the Military Government Directive related to the other demands on the German economy referred to in the second paragraph of section 1 of the preliminary program, but did not weaken the primacy given the security objective.

The Berlin Protocol reaffirmed this United States policy in declaring that the primary purpose of the Allies in occupying Germany was "To assure that Germany will never again threaten her neighbors or the peace of the world". (See "Introductory Statement on Germany" in the Berlin Protocol). It also adopted as a basic means for achieving this aim, and made mandatory, the complete disarmament and demilitarization of Germany and the elimination or control of all German industries that could be used for military production. (See par. 3.) The Protocol acknowledged the necessity for measures or controls to provide for the needs of the occupying forces, a reparation program, and the opportunity of the German people to achieve a minimum peacetime economy. (See par. 15.) But in acknowledging these other objectives, the Protocol did not qualify the primacy given to the security purposes of disarmament and demilitarization, including the elimination or control of all German industry that could be used for war production.

A fuller discussion of the relationship of German disarmament; as reflected in the detailed FEA program set out here, to these other economic considerations, is contained in section XI and section XII of this report.

2. *Necessity for internationally enforced economic and industrial disarmament of Germany.*—International arrangements for the use of persuasion or force to prevent future acts of aggression must be supplemented in the case of Germany by action to eliminate or control its economic and industrial war-making power. It shall be an objective of our foreign policy to secure the creation of these arrangements and all agents or departments of the United States in the field shall coordinate their activities, under the guidance of the Department of State, to this end. Some of the principal steps necessary or desirable to the achievement of this, our first and primary objective in the treatment of Germany, are described below.

As indicated above, both the military-government directive and the Berlin Protocol accepted the proposition stated in the first sentence, section 2, of the preliminary program quoted above. The Berlin Protocol and events preceding it gave ample evidence of the fact that this purpose has become an objective of our foreign policy.

3. *Direction to develop Yalta policy in specific detail.*—A specific and detailed development, from a United States point of view, of the statement of policy agreed to at Yalta, should be accelerated. United States agencies and officials charged with responsibilities of seeing to it that Germany does not become a menace again to succeeding generations must be adequately and promptly prepared for the negotiation and execution of this policy, in conjunction with our allies and other peace-loving nations. Therefore, cooperation by the various agencies and departments of Government with the FEA study project on this subject is to be encouraged and the necessary personnel and facilities devoted to it.

As indicated previously, the Technical Industrial Disarmament Committee reports have been completed and made available to the United States Group Control Council and other military and civilian authorities charged with the responsibility of negotiating and instituting a full program for German disarmament with our allies. This report constitutes one recommended version of a "specific and detailed development" of the Yalta Declaration and the Berlin Protocol and is designed to assist United States negotiators in preparing for this task.

4. *Direction to achieve unified policy on this subject with our allies by active negotiation.*—A substantial measure of agreement on the international arrangements and acts necessary to the elimination and control of Germany's industrial war-making power is indispensable to an achievement of this objective. This agreement must be achieved through active, persistent, and vigorous negotiations with our allies through the various instrumentalities established for this purpose including the Allied Control Council, the European Advisory Commission, and the Reparations Commission. Until such a substantial measure of final agreement is reached, every effort should be made by the responsible United States executive agencies and officials (*a*) to avoid unilateral action, either by the United States or its Allies, of a character that might prejudice the ultimate achievement of this objective, and (*b*) to take unified interim action that will promote its attainment.

The Allied Control Council in Berlin has been engaged, since the first of August, in developing a course of action necessary to the elimination or control of Germany's war-making power. Previously, the Reparations Commission, sitting in Moscow, explored the general area of international agreement on reparation which involved a vital area of decision on disarmament. Most important of all, the heads of state of the United States, the Union of Soviet Socialist Republics, and Great Britain met and achieved a substantial measure of agreement at Potsdam in the form of the Berlin Protocol.

5. *Directions to military government.*—It is particularly important that existing and future directives to those responsible for military government take into full account the developing outlines of this policy. The military government must avoid doing those acts that may be prejudicial to this aim and take such action as may make possible its execution of the portions of this policy assigned to it for fulfillment. Specifically, the document known as JCS 1067 should be revised to take this policy properly into account and the War Department should prepare to staff the United States Group Control Council, with the cooperation of the Departments of State, Navy, and Treasury, and the FEA, with personnel adequate in numbers and training to effectuate this program.

Several weeks after the preparation and circulation of this FEA document, negotiations between the various agencies were consummated successfully and resulted in the revision of JCS 1067 into the military government directive which appears in appendix E and is under discussion here. As will be related later, this revision resulted in the inclusion in the directive of agreed general principles of German economic and industrial disarmament.

6. *Acceptable working principles of German economic and industrial disarmament.*—While the specific development of this policy in detail, from a United

States point of view, is not completed, some of its general outlines acceptable to the United States may now be described. The German economic and industrial war-making power should be eliminated or controlled by a combination of measures, including, without limitation on the foregoing: (*a*) The seizure and removal of stocks of arms, ammunition, and implements of war and the suppression of their manufacture or acquisition in Germany or by Germans, including the elimination or control of technological research and development importantly related thereto.

The military disarmament program described in section 6 (*a*) of the preliminary program was adopted in paragraph 30 of the military government directive and paragraph 3 (1) (B) of the Berlin Protocol where it was stated that—

> All arms, ammunition, and implements of war and all specialized facilities for their production shall be held at the disposal of the Allies or destroyed. The maintenance and production of all aircraft and all arms, ammunition and implements of war shall be prevented.

This principle is developed in detail in section I of this report.

The principle of scientific disarmament contemplated in the last two lines of section 6 (*a*) of the preliminary program was adopted in more detailed form in paragraph 31 of the military government directive and paragraph 15 (E) of the Protocol. Paragraph 15 (E) of the Berlin Protocol requires that Allied controls be imposed upon the German economy to the extent necessary—

> To control all German public or private scientific bodies, research and experimental institutions, laboratories, etc., connected with economic activities.

This principle is developed in detail in section III of this report.

6. (*b*) The destruction or removal from Germany and the prevention of the future acquisition within Germany of the means (facilities and raw materials) of manufacturing certain highly essential military matériel such as, for example, aircraft, synthetic oil, synthetic rubber, light metals, and certain key segments (yet to be defined) of other industries not to be completely eliminated.

6. (*c*) The prohibition or international control of imports into Germany of the items mentioned in (*b*) and certain other materials and products (yet to be defined) highly important in quantity for sustained military operations. Wherever these items (on which Germany is to be made dependent upon the outside world for security reasons) are required in limited quantites for legitimate civilian functions, both their importation and allocation shall be controlled so as to prevent excessive stock piling.

6. (*d*) The extirpation of German economic autarchic practices likely to result in German self-sufficiency in certain materials and products important as war potential at the expense of the peacetime standards of the German people.

6. (*e*) The establishment of industrial controls designed to lower substantially the aggregate of the capacity, rate of processing, and exports of the heavy industries of Germany such as the metal, machinery, and chemical industries. These controls should be exercised in a manner and for a period of time adequate to permit the elimination of German economic domination of Europe and removal of the disparity of industrial war potential in favor of Germany between Germany and her neighbors. Both of these factors over a long period of time have been conducive to and have made possible German aggression. To accomplish fully this objective, the plant removal referred to below (see subsec. *f*) and other economic programs of the United Nations should be coordinated so as to strengthen industrially the countries in Europe outside Germany.

6. (*f*) The removal or destruction of the plants and facilities rendered useless by decisions pursuant to the foregoing principles and the control of rehabilitation and new plant construction accordingly.

Paragraphs 30 (A) and 30 (B) of the military government directive established as United States policy the proposals made in sections 6 (*b*) and 6 (*d*) calling for the complete elimination from Germany of the means of production of aircraft, synthetic oil, synthetic rubber, and light metals, and added merchant shipping to the list. While

the Berlin Protocol specifically directed elimination of the aircraft, ocean going shipping, and armament industries, it by no means precluded the elimination of other key or autarchic industries pursuant to a general program of industrial disarmament contemplated by paragraphs 3 (1) and 15 (A).

The system of export and import controls utilized for industrial disarmament purposes contemplated by sections 6 (c) and (e) of the preliminary program was incorporated in paragraphs 40 and 41 of the military government directive and paragraph 15 (D) of the Berlin Protocol. The Protocol directed that controls be imposed "To control German industry and all economic and financial international transactions, including exports and imports, with the aim of preventing Germany from developing a war potential and of achieving the other objectives named herein."

The FEA proposals regarding heavy industries set forth in sections 6 (e) and 6 (f) were matched in paragraph 32 of the military government directive and in general by the reparation directive. They were fully adopted in almost the same language by paragraph 11 of the Berlin Protocol. A portion of this paragraph provided that—

> Production of metals, chemicals, machinery, and other items that are directly necessary to a war economy shall be rigidly controlled and restricted to Germany's approved postwar peacetime needs to meet the objectives stated in paragraph 15. Productive capacity not needed for permitted production shall be removed in accordance with the reparations plan recommended by the Allied Commission on reparations and approved by the governments concerned, or if not removed shall be destroyed.

It should be noted in passing, although it will be discussed later in more detail, that the FEA proposed preliminary United States program, the military government directive, and the Berlin Protocol have all uniformly rejected both the proposition that Germany's so-called heavy industries (metal, machinery, and chemical) should be completely eliminated or that conversely, her excessive capacity in these industries should be allowed to survive in the post-surrender period. All have adopted a position favoring a substantial reduction in that capacity to a level commensurate with her legitimate peacetime needs and a rigid control of permitted capacity. These principles are developed in detail in section II of this report.

> 6. (*g*) The permanent detachment from Germany of territory bordering on other countries when such territory contains unusual concentrations of natural resources and production facilities which have been used importantly for war production and, left in German control, would provide an important base for industrial rearmament. This type of territorial detachment is not an acceptable principle of German economic and industrial disarmament unless it is accompanied by certain safeguards. These safeguards must include: (1) A transfer of the ownership and management of the important natural resources and production facilities from German hands; (2) a population removal sufficient to insure the loyalty of the detached areas to the peace policy of the United Nations; and (3) an international guaranty of the borders of the territories detached sufficiently to insure their not falling into German control. The result of this will be to deprive Germany of the control of the unusual concentrations of natural resources and facilities which are a threat in its hands, but to permit a substantial development and utilization of these resources by Europe and the world.

Until a final determination of the borders of the new Germany and the conclusion of the treaties and governmental arrangements pertaining to territory to be detached, it is too early to comment on the implementation of section 6 (*g*) of the "Preliminary United States program." The permanent disposition of Upper Silesia and the

Rhineland-Ruhr area were not a subject of policy determination in the military government directive, nor were these questions disposed of at Potsdam. The Protocol placed administrative control of certain areas in eastern Germany which included Upper Silesia in the hands of the Polish provisional government and the USSR. The development of this principle, in terms of disarmament, appears in section X of this report.

7. *Relationship of various principles to each other.*—The detachment of territory and/or removal of plant (see subsecs. (*f*) and (*g*) in par. (6)) are not to be considered as a substitute for the other economic controls (see subsecs. (*a*) through (*e*) in par. (6)).

The mere fact that there are some proposals for the detachment of territory and resources from German control does not justify any failure to apply any of the foregoing principles of economic control to the territory. Until definite arrangements for detaching these territories have been made, there should be no development of industries with an important war potential and the industry should be treated just as industry is treated in the other parts of Germany. When and if such proposals are agreed to and executed by the Allied Nations, the application of the principle stated in (*e*) above, regarding limitation of capacity, processing, and exports in the heavy-industry field, may be modified accordingly. For example, if it were to be decided that steel capacity and rate of processing for Germany should be controlled at X million tons annually, and a satisfactory detachment of territory was agreed to, the steel capacity and processing in the detached areas need not be counted as Germany. After the arrangements for detachment in accordance with the principles stated in paragraph 6 above are completed, a new economic policy especially adapted to the conditions of the area should be devised.

No comment on section 7 in view of the discussion of 6 (*g*) above.

8. *Types of economic controls which the Allied Control Council should be prepared to establish and administer.*—The principles referred to in paragraph 6 as desirable for the elimination and control of German internal war-making power can be executed by a variety of economic control measures. The Allied Control Council and other related international machinery should be developed adequately and as quickly as feasible to perform within Germany measures of the following types which may be necessary to the achievement of this objective:

(*a*) Prohibition of production of certain classes of products.

(*b*) Limitations on industrial capacity in certain proscribed fields.

(*c*) Limitations on the rate of industrial operations and exports in certain products and industries.

(*d*) Limitations on imports and the allocation of certain imported items.

(*e*) Allocation of certain basic materials and utility services to enforce measures of the type described in (*a*) through (*d*).

(*f*) Removal or elimination of certain selected plants and facilities and a prohibition or control of industrial rehabilitation and new construction of defined types necessary.

(*g*) Certain restrictions on research activities and the activities of certain industrial technicians.

Paragraphs 16, 30, 31, 32, 39, and 40 of the Military Government directive call for the establishment of the various types of controls set forth in section 8 above. Likewise, the Berlin Protocol in paragraphs 3 (1) (B) and 15 (A), 15 (D) and 15 (E) provided generally for the same controls. This principle and the administrative machinery necessary to its implementation are developed in section VIII of this report.

9. *The necessity for a tripartite agreement on a short term procedure.*—As an initial step in the achievement of this long-term program, yet to be fully designed, the Control Council should be adequately prepared to put an interim program into effect along the specific lines described. This type of understanding should be negotiated at the earliest possible opportunity between the appropriate representatives of the occupying powers so that the long-term objectives approved

generally at Yalta may not be prejudiced by current action or inaction or by differences in the application of industrial disarmament measures in the various zones.

The necessity for a tripartite agreement on a policy and program for the initial period of occupation was recognized by the three major powers following the surrender of Germany and the Potsdam Conference with the resulting Berlin Protocol admirably served the need anticipated in section 9.

10. *Long-term machinery for industrial disarmament controls.*—It should be an aim of military government and other related international organizations concerned with the prevention of German aggression to develop, during the period of occupation, a basis for the maintenance of a permanent system of controls of the general type described above. It should be contemplated that at the end of military occupation some of the complex and complicated controls necessary to an industrial disarmament of Germany and the creation of a more desirable balance of economic development in Europe between German and non-German areas would have to be abandoned or substantially modified. Our objective should be to have established a simple and manageable set of controls which can be administered for the indefinite future by an international body, without the necessity of full military occupation, through a system of surveillance and inspection backed up by the ready availability of economic and military sanctions.

Both the military government directive and the Berlin Protocol were designed to provide policies and principles for the government of Germany in the initial control period. Hence, it is too early to make any judgment on the eventual decisions on the matters set forth in section 10. However, the military government directive, in paragraph 17, did provide the following:

To the extent necessary you will establish administrative machinery, not dependent upon German authorities and agencies, to execute or assure the execution of the provisions of paragraphs 19, 20, 30, 31, 32, 39, and 40 and any other measures necessary to an accomplishment of your industrial disarmament objectives.

Such administrative machinery developed during the period of occupation would provide a basis for the maintenance of a system of controls and thereby satisfy the point made in section 10. There is a fuller discussion of the post-occupation disarmament controls in section IX of this report.

11. *A United States plan for a permanent separation of the resources of the Rhineland, Ruhr, and Palatinate from German control.*—With reference to the Rhineland, the Ruhr and certain contiguous areas with heavy concentrations of natural resources and productive facilities constituting an important industrial war potential, it shall be our objective to develop a plan and negotiate an agreement to it with the Allied and neighboring powers providing for—

(*a*) The permanent detachment of these territories from the German Reich.

(*b*) The removal of existing owners and managers of natural resources and productive facilities important to war (to be defined) and the substitution therefor of an internationally owned and operated public authority. This international public authority or corporation, owned and directed by the United Nations, would manage and control these resources and facilities on behalf of the United Nations, including the new population in the territory drawn from the United Nations for the fulfillment of disarmament purposes.

(*c*) The removal from the detached areas of all but the portion of the population of these areas known to be anti-Nazi and actively sympathetic with the economic policy of the United Nations regarding Germany, with certain exceptions for age and incapacity for removal.

(*d*) The establishment of these detached areas by a United Nations mandate responsible to the general international organization.

As soon as sufficient agreement on the foregoing arrangement has been reached, except in matters which clearly require continued centralized administration and

control, military government, in providing for the administration of governmental functions in this territory to be detached, should recognize: (1) The danger of perpetuating or reviving the centralized bureaucratic structure of the former German Government in these areas; and (2) the advantage of utilizing and building upon local and regional units, so far as practicable.

The policies regarding production to be applied in the detached territory should be a matter for separate discussion by the powers jointly exercising the mandate, taking into account the military vulnerability of the territory, the extent to which industries within the territory are economically justified, and the European or world capacity available in the industries concerned.

This subject, also pertaining to the long-term solution of the German question as distinguished from interim policy measures, has not yet been the subject of formal agreement between the Allies. This report, in section X, includes a developed plan along the lines indicated, with some modifications.

12. *United States policy on plant removal as a disarmament measure.*—Every effort should be made to achieve the disarmament and demilitarization of German industry and the payment of reparations without the destruction of useful facilities by removing production facilities to the countries damaged by the war so as to reduce the industrial war potential of Germany and increase that of its victim countries. The United States should encourage the removal or scrapping of the following types of equipment:

(a) Productive facilities of a kind likely to be forbidden in Germany for industrial disarmament reasons such as, for example, synthetic oil, rubber, light metals and plants previously engaged in the assembly of aircraft and the manufacture of specialized components thereof;

(b) Productive facilities beyond the amounts likely to be permitted in industries in which limitation on over-all capacity are likely to be imposed such as, for example, the heavy metal, machinery, and chemical industries which are importantly convertible to war; and

(c) Productive facilities no longer capable of economic operation if subsidies and barriers to imports imposed to promote self-sufficiency are removed.

The United States should oppose the removal of plants necessary to insure the survival of the German population, and, in general, should encourage the maintenance of industries in the "safe" category in order to prevent excessive unrest.

Paragraphs 30 and 32 of the military government directive and the United States reparations directive reflected the general position stated in section 12. The Berlin Protocol, in paragraph 11 of the section on Germany and paragraph 4 (A) of the section on reparation, gave full effect to the principle of plant removal as a disarmament measure. A preference for removals via reparation from the metallurgical, chemical, and machinery industries was agreed upon in paragraph 4 (A). Likewise, the theory of maintaining in Germany the plant and equipment of industries in the "safe" category necessary for a German peace economy was recognized. (See pars. 11 and 19 of the section on Germany and pars. 4 (A) and 6 of the section on reparation.) These principles are developed in specific detail in section II, section VII, and section XI of this report.

13. *A US program for the treatment of German economic penetration outside Germany.*—The war-making power of Germany cannot be eliminated, nor can Germany repair the damage of war to the full extent of its power without serious restriction upon its economic relations with foreign countries.

German economic activities in other countries, unless restrained, will result in German penetration of other economies, weakening both their will and their ability to participate fully in the maintenance of peace. German activities abroad will also be used to evade the controls to be placed upon Germany to eliminate its aggressive power and to insure the fullest feasible reparation by Germany.

The principal restrictions that should be placed on the external economic relations of Germany are:

(a) To regulate German foreign trade to prevent any export balance permitting German investment in other countries or the maintenance from Germany of German personnel or propaganda outside Germany.

(*b*) To regulate German exports to prevent the dependence of other countries on Germany for supplies vital to their defense.

(*c*) To regulate German imports where necessary to prevent the acquisition through imports of the means of developing a military potential.

(*d*) To eliminate import and export duties in Germany or domestic or export subsidies except as a means of achieving the objectives of the economic policies of the United Nations toward Germany.

(*e*) To take over all assets outside Germany held by or on behalf of Germany or German nationals and to use and dispose of such assets for the reparation of war damage and in a manner preventing their subsequent restoration to German control.

(*f*) To prohibit the acquisition of assets outside Germany by Germany or German nationals until such time as the occupying powers feel that the will to or danger of use of such assets as bases for aggression no longer exists.

(*g*) To eliminate German influence over industry, commerce, or agriculture in other countries, whether exercised through cartels, patent arrangements, the employment of German personnel, or any other means; German firms shall be prohibited from participating in international cartels or other restrictive contracts or arrangements, existing German participations in such cartels or arrangements, shall be promptly terminated.

(*h*) To prevent the maintenance in other countries on behalf of Germany of technical research or production prohibited within Germany.

(*i*) To prevent the maintenance in other countries on behalf of Germany of pan-German, antidemocratic propaganda or other activities inimical to international efforts to maintain peace and democratic institutions.

(*j*) To make the return of sovereignty to Germany conditional upon an undertaking by Germany to continue to conduct its international relations within these limitations.

Negotiations should be inaugurated to establish a United Nations agency which will work in conjunction with the Reparations Commission and the Allied Control Council to accomplish the objectives set forth in subparagraphs (*e*), (*f*), (*h*), and (*i*). The Allied Control Council in its operations should make possible the execution of subparagraphs (*a*), (*b*), (*c*), (*d*), and (*g*).

This preliminary statement of an external security program has received less implementation in basic United States policy discussions and international agreement than any other phase of the FEA proposed preliminary United States program.

Paragraphs 40 and 41 of the military government directive and 15 (D) of the Berlin Protocol provided general measures of control under which section 13 (*a*), (*b*), (*c*), and (*d*) of the FEA preliminary program could be implemented. The specific policies spelled out in section 13 are not indicated in detail.

The reparation directive and paragraph 18 of the Berlin Protocol reflected section 13 (*e*). Paragraph 18 of the Berlin Protocol provided that appropriate steps should be taken by the Control Council to exercise control and the power of disposition over German-owned external assets not already under the control of United Nations which have taken part in the war against Germany.

Paragraph 42 of the military government directive repeated the substance of section 13 (*g*), regarding the participation by German firms in international cartels.

Paragraph 49 of the directive, providing for control of foreign exchange, could be used to effectuate section 13 (*f*).

In summary, it should be stated that, except for providing general export and import controls and the exercise of control over German assets in neutral countries, the Berlin Protocol does not cover by agreement the necessary features of the external security program. The provision made in the Protocol, however, has its origin in American policy.

A more fully developed external-security program is set forth in section V of this report.

14. *The development of a plan for redirection of the German economy into peaceful pursuits.*—The Allied Control Council shall develop a plan for the utilization of manpower, materials, and facilities rendered idle by reason of the limitations and controls described above for industrial disarmament reasons. This plan should be designed to canalize these resources into peaceful pursuits that will keep them usefully employed for production of goods and services for home consumption and reparations, consistent with the industrial disarmament program.

This section was reflected in paragraph 13 of the Berlin Protocol, which provided that—

in organizing the German economy, primary emphasis shall be given to the development of agricultural and peaceful domestic industries.

Some suggested fields for specific development are described in section II and section XI of this report.

15. *Utilization of German administrative agencies and business institutions.*—Whenever central German agencies or administrative services are needed to assist in the adequate performance of the foregoing tasks, and they have ceased to function, they shall be revived or replaced as rapidly as possible.

(*a*) Before utilizing German agencies military government authorities must carry through a program of denazification.

(*b*) German nationals deprived of their positions because of previous affiliations with or support of the Nazi Party or because of disloyalty to the military government authorities shall be replaced as far as possible by other German nationals. In recruiting replacements military government officers shall rely as much as practicable on the leaders and personnel of freely organized labor unions and professional associations and of such anti-Nazi political groupings and parties as may arise in Germany. Military government shall eliminate active Nazis and supporters of the Nazi regime and other individuals hostile to Allied purposes, from dominant positions in industry, trade, and finance.

This feature was reflected in paragraphs 6 and 17 of the military government directive and paragraph 6 in the Berlin Protocol, which provided that—

all members of the Nazi Party who have been more than nominal participants in its activities and all other persons hostile to Allied purposes shall be removed from public and semipublic office and from positions with responsibility in important private undertakings. Such persons shall be replaced by persons who, by their political and moral qualities, are deemed capable of assisting in developing genuine democratic institutions in Germany.

This principle, together with some supplementary provisions regarding German governmental and private institutions necessary to disarmament, is developed in detail in the institutional disarmament program set forth in section IV of this report.

16. *Coordination of reparations with security program.*—Germany must make substantial reparation for damage to, or losses of, nonmilitary property caused by or incident to hostilities. Such reparation may take the form of (*a*) confiscation of all German property, claims, and interest abroad, (*b*) deliveries from existing German assets, particularly capital equipment, (*c*) deliveries from future German output, and (*d*) German labor services in devastated countries, consistent with United States principles.

The volume and character of German reparation deliveries of capital equipment shall be largely determined in such a way as to reduce Germany's relative predominance in capital goods industries of key importance and to rehabilitate, strengthen, and develop such industries in other European countries as part of a broad program of reconstruction.

The scope and execution of the reparations program should be made compatible with the program of German economic and industrial disarmament. Recurrent reparations should not, by their form or amount, require the rehabilitation or

development of German heavy industry and should not foster the dependence of other countries upon the German economy. It should be a United States objective to oppose the establishment of ad interim reparations accounts for deliveries from future German output in the industrial categories that can be identified as being within subsections (*a*), (*b*), and (*d*) of paragraph 6 and the establishment of excessive accounts for deliveries from output in the industrial categories identified with subsection (*e*) of paragraph 6.

The reparation directive adequately reflected this section and the Berlin Protocol placed reparation upon a sound basis in accordance with the principles stated above.

Paragraphs 8 and 9 of the section on reparation in the Berlin Protocol, as well as paragraph 18 of the section on Germany, contemplate reparation in the form of German property and assets abroad. Paragraph 11 of the Berlin Protocol on Germany and the entire section dealing with reparation contemplate deliveries from capital assets, particularly in the heavy industries of key importance to war production. They make the reparation plan in the Protocol wholly compatible with a program of German economic and industrial disarmament.

As yet, recurrent reparation (reparation from current production) has not been the subject of any argument that would conflict with the industrial disarmament interest. These principles regarding the relation of disarmament to reparation together with the reasons therefor are spelled out in section VII of this report.

There is an additional provision importantly related to economic and industrial disarmament in the Berlin Protocol. Paragraph 12 of the Protocol provides that—

> at the earliest possible date the German economy shall be decentralized for the purpose of eliminating the present excessive concentration of economic power as exemplified in particular by cartels, syndicates, trusts, and other monopolistic arrangements.

This paragraph reflects paragraph 37 of the military government directive and, although not included in the original FEA proposed preliminary United States program, has become an important feature in the final program as developed in this report (see sec. IV).

In conclusion, it can fairly be said that the Berlin Protocol, insofar as it contains provisions relating to German economic and industrial disarmament, has its roots in American policy. In this field the United States has taken a role of leadership and has found a large area of common agreement with its allies.

1. Field survey and preparation of final report

Assuming that the Berlin Protocol would reflect the general principles of United States policy on German economic and industrial disarmament, the FEA Enemy Branch, having before it most of the TIDC reports in complete form, undertook, beginning in July, to prepare a draft of an over-all report which would develop the preliminary United States program in specific and concrete detail. It was felt that a formal submission of the detailed program should be preceded by a field survey conducted after the signing of the Protocol and in the light of the general agreement reached. Accordingly, as indicated previously, a special mission, constituted by the FEA Enemy Branch, went to Germany early in August. It spent some weeks there canvassing the situation on the ground, securing the reaction of various members of the staff of the USGCC and the factual

information which had become available upon the full occupation of Germany. The same mission also served the purpose of delivering copies of the TIDC reports and obtaining the informal reaction of members of the staff to the various findings and recommendations in those reports.

In the light of the TIDC reports, staff studies, the extensive field survey, and a reappraisal of the situation made necessary by some features of the Berlin Protocol, notably the removal of a large block of territory in eastern Germany to Polish administrative control, this over-all report has been prepared by the FEA Enemy Branch. The sections which follow will endeavor to spell out the principles of the Berlin Protocol relating to German disarmament in specific and concrete detail and project a program for the transition of the Allied policy for German disarmament from its initial phase to a semipermanent basis. As the final report of the FEA Enemy Branch, the recommendations herein constitute the views of that organization, submitted for the use of the United States military and civilian officials who are responsible for the negotiation and execution of policy.

PART I. THE PROGRAM IN DETAIL

SECTION I. A MILITARY DISARMAMENT PROGRAM: THE PREVENTION OF THE DIRECT PRODUCTION OF ARMS, AMMUNITION, AND IMPLEMENTS OF WAR

CONTENTS

	Page
A. The prevention of the production of arms, ammunition, and implements of war	66
1. Outline of production of arms	67
2. Outline of production of ammunition	67
3. Outline of production of implements of war	69
4. Chief components and equipment for aircraft	70
5. Other military end products	71
B. Recommendations for elimination of specified facilities for war production	71
C. Recommendations for elimination of specified tools and equipment	73
D. Necessity for continuing controls	78
E. Conclusion	81

SECTION I

A MILITARY DISARMAMENT PROGRAM: THE PREVENTION OF THE DIRECT PRODUCTION OF ARMS, AMMUNITION, AND IMPLEMENTS OF WAR

This section deals primarily with specific prohibitions that must be put upon Germany in order to effect *military* disarmament by preventing the production of arms, ammunition, and implements of war. It lists those military items the production of which must be prevented, and the types of facilities, tools, and equipment which should be removed completely as unnecessary to civilian industry. In addition it points out the essentiality of providing for methods of continuing into the post-occupation period the controls evolved during occupation, in order that adequate safeguards may be provided against a resumption of German production of arms, ammunition, or implements of war.

That a program of military disarmament of Germany would be adopted by the Allies has always been a basic assumption of the FEA. The problem was never one of justifying such a program but rather of determining the technical and detailed measures which would have to be adopted to make it effective.

This assumption, adopted as a working principle in the FEA interim report of January 10, 1945, became firm United States policy in the basic United States directive to the commander in chief of the United States Forces of Occupation in Germany (see appendix E, par. 30) which provided that—

> 30. In order to disarm Germany, the Control Council should—
>
> A. Prevent the production, acquisition by importation or otherwise, and development of all arms, ammunition, and implements of war, as well as all types of aircraft, and all parts, components, and ingredients specially designed or produced for incorporation therein;
>
> B. * * *.
>
> C. Seize and safeguard all facilities used in the production of any of the items mentioned in this paragraph and dispose of them as follows:
>
> (1) Remove all those required for reparation;
>
> (2) Destroy all those not transferred for reparation if they are especially adapted to the production of the items specified in this paragraph and are not of a type generally used in industries permitted to the Germans (cases of doubt to be resolved in favor of destruction);
>
> (3) Hold the balance for disposal in accordance with instructions which will be sent to you.

United States policy was confirmed in the Berlin Protocol wherein it was provided that—

> All arms, ammunition, and implements of war and all specialized facilities for their production shall be held at the disposal of the Allies or destroyed. The maintenance and production of all aircraft and all arms, ammunition, and implements of war shall be prevented (par. 3, I, B) * * *.
>
> In order to eliminate Germany's war potential, the production of arms, ammunition, and implements of war as well as types of aircraft and sea-going ships shall be prohibited and prevented (par. 11) * * *.

This section constitutes a specific and concretely detailed program for the execution of these policies.

The FEA program for military disarmament is based on TIDC project 1, the post-surrender treatment of German industry involved in the production of armament, munitions, and implements of war, and project 2, the post-surrender treatment of the German aircraft industry. These study projects were prepared in answer to a request by FEA to the War and Navy Departments for a report on the best methods of assuring the military disarmament of German industry. They were written by the ad hoc Interdepartmental (War-Navy) Committee To Handle Foreign Economic Administration Projects, which was composed of T. D. Ruddock, rear admiral, United States Navy; K. B. Wolfe, major general, United States Army; H. C. Minton, brigadier general, General Service Corps; B. G. Leighton, captain, United States Naval Reserve (retired). In its letter of transmittal, the Committee indicated that—

> The data presented, conclusions reached, and recommendations made represent the consensus of the Committee and do not, until formally approved by the Secretary of War and the Secretary of the Navy, or their authorized representatives, constitute the official views of those Departments.

This section of the FEA Disarmament Program is largely a summary of those portions of projects 1 and 2 dealing with the prevention of direct production of arms, ammunition, and implements of war. These measures, proposed by the ad hoc committee, should be incorporated in the broad program for the disarmament of Germany. In addition to those measures quoted from projects 1 and 2, this section contains some recommendations for supplementary measures for preventing the *direct* production of *military* items, derived from the studies made by other TID committees dealing more exhaustively with particular industries possessing a high war potential.

A. The Prevention of the Production of Arms, Ammunition, and Implements of War

In its first interim report, made in January, FEA Enemy Branch had assumed that Allied policies would follow the lines eventually adopted concerning the prevention of production of arms, ammunition, and implements of war including aircraft, and in making its studies, the Ad Hoc Committee adopted this assumption. Accordingly, the conclusions reached in projects 1 and 2 are in effect recommendations for implementing the Allied disarmament policy which has now been formally agreed upon. The Committee discussed production methods for the chief classifications of arms, ammunition, and implements of war, and pointed out for each classification the possible techniques of control and the difficulties which might be encountered. The Committee and FEA recommend that *the manufacture of any products in these categories should be prohibited, appropriate penalties for violations provided, and adequate machinery for detection or methods of enforcement provided to the extent practicable.*

The list of items with the conclusions of the Committee as to the best possible methods of control is as follows:

1. OUTLINE OF THE PRODUCTION OF ARMS

(*a*) *Rifles, carbines, pistols, automatic rifles, or machine guns .50 caliber or 13 millimeters and below.*—The control of the manufacture of small arms can, with considerable chance of evasion, be best exercised by limiting the amount of steel of the proper quality, by control of machine tools, by destroying all State or privately owned plants and their productive equipment engaged in the manufacture of parts or the assembly of the finished product; and by close control of the surrounding countries to prevent the delivery of materials and/or finished parts or products to Germany.

(*b*) *Guns, howitzers, and mortars above .50 caliber or 13-millimeter mortars—all types.*—Mass production of artillery equipment is usually carried on by manufacturing the various major components in a number of facilities, all of which are scheduled separately. The various components are then shipped to the Government proving grounds where final assembly and testing is accomplished. In view of the large number of manufacturers required and the fact that artillery matériel does not resemble any civilian-type item, it is not believed that production of this equipment could be accomplished in any quantities without detection. All operations except testing could be underground. Limitations on high quality steel and removal of all arsenals and proving grounds is essential.

(*c*) *Rocket launchers.*—The manufacture of the metal components of rocket launchers would be difficult to control as an item. Reliance will have to be based on elimination of the propellent powders and explosive fillers used in rockets.

(*d*) *Grenade throwers.*—Same as for (*a*) Rifles, carbines, etc.

(*e*) *Flame throwers.*—Since the item is rather small and could be manufactured by almost any small machine shop, production could be carried on on a small scale without readily being detected. Underground operations would be practicable.

2. OUTLINE OF THE PRODUCTION OF AMMUNITION

(*a*) *Small-arms ammunition, .50 caliber or 13 millimeters and below.*—It appears that it will be almost impossible to control the manufacture of small-arms ammunition if raw materials are available. This is true since this ammunition in its simpler forms can be manufactured by hand in any size building. It can be manufactured in quantity if a production could be carried on for years until large quantities had been built up. This stock pile could be greatly augmented because of the ease of undetected importations. However, to maintain an army of any size, the problem would be one of setting up large special-purpose plants with modern machinery which would be easily discovered.

(*b*) *Projectile bodies over .50 caliber or 13 millimeters.*—Manufacture of finished metal components on a large scale should be readily detectable, but accumulation of quantities over a period of time difficult to control. All operations except testing could be underground. Control of high quality steel and machine tools is very important.

(*c*) *Cartridge cases.*—Production of finished cases in large quantities would be readily detectable. Underground operations are feasible. Control of machine tools is most important.

(*d*) *Propellant powders.*—Accumulation of some propellant powders would be extremely difficult to control. Rigid control of the chemical industry to an absolute minimum production and elimination of specific types of manufacture are necessary to prevent large quantities being secretly stored.

(*e*) *High explosives.*—Difficult to control the accumulation of some high explosives. Strict controls of the chemical industry and the elimination of certain types of production should prevent any sizable quantities being secretly obtained. Elimination of specialized storage areas is essential. The more important basic chemicals which should be subject to rigid controls are ammonia, nitration toluene, sulfuric acid, nitric acid, and acetic acid.

(*f*) *Fuzes and primers.*—The manufacture of mechanical components such as gear trains, etc., might be difficult to detect.

(*g*) *Bomb bodies.*—Production of finished bombs would be easily detected. However, a mill making oil pipe could be quickly converted to bomb base production. Operations could be underground. Control of steel and machine tools important.

(*h*) *Torpedoes less war heads.*—The only practical control points are in controls of the basic materials and machine tools.

(*i*) *Torpedo war heads.*—Manufacture of the explosive charge and filling are the only possible control points.

(*j*) *Incendiary materials.*—Because of the complexity and extent of facilities that could be used in incendiary manufacture, it is necessary that competent chemical engineers familiar with the type of equipment involved be charged with the responsibility of examining facilities which may be suspected of being converted to the manufacture of incendiary materials.

(*k*) *Incendiary bombs.*—Production of the incendiary bombs in general is divided into two distinct operations; that is, all metal component parts such as cases, fuzes, bursters, primers, etc., are manufactured by a large number of plants after which all component parts are shipped to Government arsenals for final assembly and loading with the special incendiary mixtures. At the present time, all loading of incendiary bombs is done entirely by Government-owned arsenals. In view of the wide variety of parts made of many different kinds of metal it would be extremely difficult to manufacture a complete item in one facility, therefore production of incendiary bombs could not be accomplished without being detected, particularly since the finished item in no way resembles any normal peacetime product.

(*l*) *Mines, antitank, and antipersonnel (filled).*—Land mines are simple of manufacture with common equipment, with the exception of the explosive elements. Operations can be carried out underground. Control of steel and machine tools important.

(*m*) *Naval mines and depth charges (filled).*—Control of the manufacture of the explosive charges would appear to be the best way to eliminate production of naval mines and depth charges.

(*n*) *Rockets.*—Because of special equipment needed, particularly in propellant powder manufacture, production of rockets should be easily detected.

(*o*) *Grenades.*—(No conclusions given.)

(*p*) *Assembly of complete rounds.*—Assembly of complete rounds is probably most detectable phase of ammunition production. Operations feasible underground. Control of special equipment and machine tools is extremely important.

3. OUTLINE OF THE PRODUCTION OF IMPLEMENTS OF WAR

(*a*) *Tanks less artillery.*—It would be possible for either a locomotive plant or automotive plant or other similar production facility to produce tanks in minor quantities without any major change in production equipment. However, mass production would require major changes in equipment and installations in such plants. The components required for tank production are basically peculiar to such vehicles. In other words, power plants have had to be developed specifically for such use. This is also true of the power train. However, in certain instances commercial-type engines have been used, but these have had to be used in pairs in order to secure sufficient power. Therefore it would be possible for commercial production of components to be accomplished, but use in tank installation is almost immediately disclosed by the combination of two or more such power plants. The only other known application of such multiple-power units is in naval craft. The above applies equally on other units built on tank chassis.

(*b*) *Tractors.*—The components required for tractor production are almost identical with those required for any commercial tracked vehicle. Furthermore, commercial tracked vehicles could be so designed that their chassis would be readily usable in a military tractor or amphibious tractor.

To control tractor production or the components required for such production, it will be necessary to control the facilities available for the production of commercial internal-combustion engines and commercial tracked vehicles. Probably the most effective control which could be exercised would be that of steel production—particularly high-alloy steels. This should be possible by a very strict control over the importation into Germany of alloying elements, such as chromium, tungsten, molybdenum, etc., without which it is not considered possible to produce a tractor suitable for war purposes.

(*c*) *Armored vehicles.*—Production of components and assembly into vehicles will be difficult to detect and control without very close supervision of all automotive production and assembly.

(*d*) *Ships less armament.*—The facilities required to build a steel merchant ship are exactly the same facilities required to build a combatant ship. Merchant ships can be readily designed so as to make their conversion to combatant types relatively simple. The use of new weapons, such as rockets, flying bombs with suicide crews, etc., makes the question of ship conversion most simple, since the launching devices for such weapons could be developed without fear of detection and could readily be installed on a merchant type hull.

To permit Germany to have the industrial resources it would require to build modern ships, both in the way of shipyards and component manufacturers, would be the same as giving it an industry fully capable of producing combatant ships.

If Germany is permitted to retain any shipbuilding industry whatsoever, it should be limited to ships not exceeding 4,000 tons displacement.

(*e*) *Fire-control instruments.*—In view of the fact that relatively few special machine tools and materials are necessary for the production of fire-control equipment, it is believed that any plant normally engaged in precision manufacture of small components, whether mechanical, electrical, or optical, could be readily converted to the production of subject equipment rather easily. Detection of production of subject equipment would be rather difficult unless the item was being manufactured in large mass quantities.

(*f*) *Military radio and radar equipment.*—This brief outline covers only the high points of the radio and radar manufacturing industry. With the use of ordinary radio gear, transmission points were easily detected, due to the antenna systems and type of installation necessary. With the advent of ultra high frequencies and the continued experimentation along the ultra high-frequency lines, it is now possible to design and manufacture radio gear that is simple to operate and exceedingly difficult to detect.

(*g*) *Infrared equipment.*—The most important phases of activity in the construction of infrared systems are electronic tube manufacture and the compounding of special alloys and chemical compounds. To this must be added research and development facilities. Infrared is only in its infancy as far as military applications are concerned. Consequently, because of the advantage that can be obtained by employing infrared systems for military purposes, much research will yet be required utilizing electron-tube techniques for its improvement. The control of the required alloys of metals and chemicals, of electron-tube-making facilities, and of electronic research and development is essential if German progress in this field is to be controlled.

(*h*) *Poison gases.*—To prevent poison-gas manufacture in Germany in existing chemical equipment, it is imperative that qualified chemical engineers be employed to investigate the facilities, analyze records as to raw materials received and products shipped, and make spot checks on operation procedures and methods. All personnel must be constantly on the alert for shreds of evidence which would lead to information regarding the development of gases which are not presently known or applied as military weapons.

(*i*) *Mounts and turrets for guns, howitzers, and mortars.*—Underground operations feasible up to 5-inch size. Quantity production could be detected. Large-size machine tools and heavy industrial equipment offer best control. Steel limitations are important.

(*j*) *Ordnance and signaling equipment for aircraft.*—(See similar items of ground equipment.)

4. CHIEF COMPONENTS AND EQUIPMENT FOR AIRCRAFT

The report on project 2 did not discuss aircraft armament which was covered in project 1. Without dealing with possible points of control, it described production methods in the following aircraft

industries, all of which are to be abolished and prevented from being reestablished:

(a) Airframe industry.
(b) Aircraft-engine industry.
(c) Aircraft-propeller industry.
(d) Aircraft turbo-supercharger industry.
(e) Aircraft landing-gear industry.
(f) Aircraft-instrument industry.
(g) Aircraft electrical-equipment industry.
(h) Aircraft gun-turret industry.
(i) Aircraft gun-sight and computer industry.
(j) Aircraft oxygen-equipment industry.

5. OTHER MILITARY END PRODUCTS

In addition to the above-listed items, FEA recommends, on the basis of the TID Committee reports on chemicals (project 16), steel (project 15a), and the automotive industry (project 12), that special attention be paid to preventing the production of the following military end products:

(a) The following chemicals, used exclusively or almost exclusively for military purposes:

Elemental phosphorus.
Concentrated hydrogen peroxide.
Special ordnance chemicals.
Methanol produced by high-pressure synthesis.

(b) Types of steel used almost exclusively for war production, such as—

Electric furnace alloy steels.
Ship plates.
Armor plates.
Shell billets.
Bearing steel.
Cold-finished tubing.
Hammerwelded tubing.
Seamless tubing.
Ship shafting.
Forgings larger than 4,500 pounds.

(c) Production of the following types of vehicles should be prohibited and the possession of machinery and equipment designed for their production should be forbidden:

Amphibious vehicles.
Vehicles with more than one driving axle.
Track-type vehicles, with the exception of crawler-type tractors to be used for industrial or agricultural production when equipped with unsprung bogies and their maximum speed does not exceed 8 miles per hour when running with governor adjusted to provide advertised rated engine speed at 85 percent maximum horsepower corrected.

B. Recommendations for Elimination of Specialized Facilities for War Production

"All arms, ammunition, and implements of war and all specialized facilities for their production shall be held at the disposal of the Allies or destroyed," reads section III, 3, (i, b) of the Berlin Protocol. In its interim report made in January, the FEA Enemy Branch had assumed that such a policy would be adopted, and accordingly the Ad Hoc Committee made its study on that assumption. The Ad

Hoc Committee recommended that the following types of facilities, including all machinery and equipment, should be destroyed or removed for reparation and their reconstruction prohibited; and the FEA Enemy Branch incorporates these recommendations into its disarmament program:

1. All arsenals.
2. All explosive-manufacturing plants and explosive-loading plants.
3. All plants for the production of internal combustion turbines for any purpose.
4. All plants designed for or exclusively devoted to the manufacture, assembly, maintenance, repair, storage of aircraft, and the components thereof. All airports and air-traffic control installations, including hangars, landing strips, taxi strips, and aircraft-servicing facilities. Exceptions to these eliminations may be made to the extent of permitting the retention of airports, air-traffic control, and airport-service installations and airport buildings in the postoccupation period up to, but not exceeding, *the essential requirements for such civil aeronautic activities as are determined by the occupation forces prior to their withdrawal to be indispensable to the civilian economy of Germany.*
5. All testing facilities (proving grounds) for aircraft, aircraft power plants, and armament, including engine- and propeller-test rigs, firing ranges, and flight-test proving stations, static test buildings, altitude- and cold-test chambers.
6. All experimental laboratories or design activities devoted exclusively to the development of any item of arms, ammunition, or implement of war. (This and point 7 are dealt with in more detail in sec. III.)
7. All laboratories and other institutions and installations devoted exclusively or primarily to the research, design, development, or test of aircraft or equipment therefor, including *without any exception* all wind tunnels, and all aerodynamic measuring devices and power installations therefor. Included are laboratories and equipment of universities, schools, and other educational institutions which are devoted to aerodynamic or aeronautical engineering.
8. All shipbuilding facilities having a capacity for ships of over 140 meters length over all and 4,000 metric tons light displacement. Light displacement is defined as the total actual weight of the fully complete ship without disposable weights—namely, stores, fuel, water, cargo, crew, and passengers—but otherwise ready for sea.
9. All concealed or underground factory or laboratory installations, except those necessary to a civilian economy such as mining, quarrying, etc.
10. All special bombproof, blastproof, and explosionproof protective structures or construction, except to the extent that they are required to the peacetime safety of the workers.

In addition to eliminating the above-listed special facilities for war production, others should be reduced in capacity in conformity with the removal of specialized equipment. The appropriate recommendation in projects 1 and 2 reads:

Accompanying the destruction or removal of the machinery and equipment listed (in subsec. C) below, take the following action regarding plant buildings and services therefor:

(*a*) Remodel or destroy as appropriate all buildings in such manner as will prevent reinstallation of the equipment without easily detected additions to or modification of the buildings.

(*b*) Destroy or otherwise render unusable the access roads and other service installations, such as sewage, water, service, etc., beyond the requirements of the remaining installations.

In accordance with the request of the FEA, the Ad Hoc Committee concerned itself primarily with recommending measures to effect the direct military disarmament of German industry. Thus the bulk of its recommendations deals with specialized facilities for war production.

However, the Committee indicated forcefully that measures prohibiting the direct production of arms, ammunition, and instruments of war could not be wholly successful unless production facilities in certain basic industries easily converted to or used for war production were severely limited. Accordingly, it listed certain types of facilities not exclusively military in nature which are so essential to a war economy that they should be either eliminated or reduced to, and not allowed to go over, a level determined as necessary for approved civilian needs. These industries are discussed fully in section II, where FEA bases its recommendations on industrial disarmament upon the exhaustive technical studies provided by the TID committees. It is highly significant that, after listing specialized military facilities which should be removed, the Committee of trained military experts emphasized the necessity for a broad economic and industrial disarmament program by stressing the need for firm controls over many German industries not ordinarily related to the manufacture of armaments.

C. Tools and Equipment

The Committee recommended, and FEA incorporates into its program, the following measures:

Destroy or remove for reparation all special-purpose, automatic, and high-precision machine tools and industrial equipment *which have no substantial use in a peacetime economy*, and prohibit their replacement. A partial list illustrative of significant items every one of which should be destroyed or removed appears below:

1. Shrinking pits for large-caliber guns.
2. Cartridge-case trimmers.
3. Shell-banding machines
4. Shell-turning lathes.
5. Armor-plate planers.
6. Gun turning and boring lathes.
7. Rifling machines.
8. Gun-barrel reaming or boring machines.
9. Breech-block sectoring machines.
10. Powder-pelleting presses.
11. Automatic shavers for projectiles.
12. Volumetric powder-loading machines.
13. Projectile-weighting machines.
14. Powder-drying ovens.
15. Powder-blending machines.
16. Loading machines.
17. Annealing furnaces for cartridge cases.
18. Projectile-assembly presses.

19. Crimping presses.
20. Marking machines.
21. Powder-sifting machines.
22. Magnesium- and aluminum-extrusion presses.
23. Hydro presses or large toggle presses of sufficient bed area to produce formed airplane parts.
24. Special milling machines for machining wing spars or special stiffeners. (Similar to United States "Onsrud" or "Farnum" spar-cap millers.)
25. "Onsrud" broken-arm type combination router and drill press for producing skin shapes.
26. Combinations of automatic machines, similar to United States Greenslee type, which perform multiple machine operations on articles such as engine cylinders, radial type.
27. Special boring machines which simultaneously finish-bore engine-cylinder blocks, in-line type.
28. Special multispindle drilling machines, with turntables, which automatically perform drilling, facing, boring, and counterboring operations.
29. Special riveters of Erco type which perform speed riveting on airplane subassemblies.
30. Special milling machines capable of milling faces of airplane-wing ends for attachment to fuselage.
31. Rollers, "Farnum" type, which could produce rolled shapes from flat material as a substitute for aluminum extrusions used in fuselage or wing construction.
32. Stretch presses, of special type, which perform certain steel-drawing and forming operations that are not practical on hydro- or toggle-type presses.
33. Special type electric seam welders, used in airplane subassembly and jettison gasoline-tank production.
34. Special deep-throat electric spotwelders of two-stage pressure impact, resistance controlled, similar to United States "Sciaky" type, used extensively in subassembly manufacture.
35. Hand riveters, electric or air, used in assembling skin surfaces.
36. Hydrogen welding and brazing equipment of the type used in airplane manufacture.

To the above list given by the Committee, the FEA would incorporate in its Disarmament Program a ban on the following specialized tools and equipment as indicated by the TID Committees on Machine Tools (project 11) and Light Metals (project 5), and Rubber (project 7) and Steel (project 15a):

37. The design, construction, ownership, use, or storage of the following types of machine tools should be prohibited in Germany

(*a*) All machines specifically made or primarily used for production of armament or aircraft, such as—

Deep-boring machines.
Special presses for the production of shells and shell cases.
Aircraft-riveting machines and other special machines for aircraft production.

(*b*) Certain types and sizes of general-purpose machine tools which are of critical wartime importance, such as—

Vertical-boring mills over 90-inch table.
Lathes over 24-inch swing and over 20 feet between centers.
Grinders over 24-inch swing and over 10 feet between centers.
Thread-grinding machines.
Two-dimensional or three-dimensional duplicating machines.
Cam-milling machines.
Ball and raceway grinders.
Hydraulic presses over 1,000 tons capacity.
Forging presses over 1,000 tons capacity, and 4-foot *working* clearance.
Forging hammers over 7,500 pounds.
Gear-tooth grinders.
Gear hobbing, shaping, and cutting machines over 48 inches.
Bevel-gear generating machines (Gleason types).

38. Eliminate the following types and sizes of aluminum-fabricating equipment:
(*a*) Rolling mills exceeding a width of 30 inches requiring more than 1,000 horsepower for hot rolling or 200 horsepower for cold rolling.
(*b*) Extrusion presses having greater than 1,000-ton load on the billet.
(*c*) Draw benches longer than 20 to 30 feet and in excess of 50-horsepower motor drive.
(*d*) Rod-and-bar rolling mills in excess of 18-inch width on the rolls at maximum, and driven by more than 300-horsepower motors.
(*e*) Forgings in excess of 5,000 pounds, hydraulic forging presses in excess of 1,000 tons, and upsetters 3 inches or greater in working diameter.
(*f*) Conveyor lines and mechanical sand-handling equipment in all highly mechanized foundries; die-casting machines in them beyond 20 inches in diameter or smaller.
(*g*) Melting furnaces, other than electric, with temperature range in excess of 2,400° F.

39. Plant and equipment should be removed and replacement prevented, for specialized rubber military products such as—
(*a*) All rubber parts for aircraft and airplane tires and tubes.
(*b*) All bullet-sealing rubber products—e. g., cells, hose, etc.
(*c*) Airship envelopes and barrage balloons.
(*d*) Combat tires and tubes.
(*e*) Tank block treads and tracks and bogie rollers.
(*f*) Submarine jars and parts.
(*g*) Munitions-handling equipment.
(*h*) High-altitude oxygen masks.

40. Steel-making facilities should be reduced to the limitations of size and type provided for on the accompanying chart, in order that production facilities most important for military production may not be available.

Physical limitations on productive facilities of the German iron and steel industry

Facilities	Recommended limitations	Products attainable with recommended limitations	Basis for recommendation
1. Blast furnaces	None as to size. Total capacity to be limited to metallic deficit under recommended ingot and casting capacities.	Iron for steelmaking and castings	Capacity should take into account hot-metal requirements for satisfactory Bessemer and open-hearth operations.
2. Crucible pots	80 pounds	Carbon tool steel; alloy tool steel within limitations.	Selected size is nominal.
3. Bessemer converters (acid and basic)	25 tons	Ingots within size limitation	Size is nominal.
4. Open-hearth furnaces (stationary)	100 tons		
5. Open-hearth furnaces (tilting)	100 tons		
6. Electric furnaces (arc and induction)	To be prohibited		Eliminated to prevent production of electric furnace alloy steel, including high-alloy tool steels, heat-resisting steels, and special ordnance and bearing steels.
7. Strippers, stripper and soaking pit, cranes, soaking pit and reheating furnaces.	Restricted to handling of 4,500 pounds of ingots.		Recommended size is the minimum required for recommended blooming mills, and to produce slabs, blooms, and billets of proper size for recommended finishing mills. This, with No. 8, constitutes the basic control.
8. Blooming mills	36 inches	Blooms and slabs for limited finishing mills.	Minimum size necessary to produce blooms, slabs, and billets for recommended finishing mills.
9. Slabbing mills	Prohibited		Not required as slabs can be produced on high-lift 36-inch blooming mill. Should be prohibited because slabbing mills are easily adapted to rolling of armor plate.
10. Billet mills	21 inches	Billets to 4 inches	Minimum size to produce range of billets for recommended finishing mills.
11. Structural mills	32 inches roughing; 26 inches finishing.	Arch-web piling to 20 inches; H-beams to 8 inches; standard beams to 15 inches; channels to 24 inches; rails to 100 pounds.	
12. Plate mills (sheared)	66 inches	Plates to 60-inch width	Minimum size for plates required for domestic economy. This will require importing large-size heavy plates for boilers, drums, stills, and other pressure vessels.
13. Plate mills (universal)	48 inches	Plates to 48-inch width	Minimum size to produce universal plates for domestic economy.
14. Plate mills (semicontinuous of more than 2 stands).	Prohibited		Not required for domestic economy. Easily convertible to production of ship and armor plate.
15. Skelp mills	36 inches	Skelp for 10-inch pipe	Minimum size to produce 10-inch pipe.
16. Rail mills	Prohibited		Not required, as rails can be rolled on recommended structural mills. Rail mills are easily convertible to production of shell steel, forging blooms and billets, large rounds for ship shafting (finish forge on small press), and other war products.
17. Bar mills	22 inches	Bar to 5 inches	Minimum size to produce 5-inch bars required for domestic economy; will permit die rolling of crankshaft material for gasoline and small Diesel engines.

18. Draw and push benches (bar and tube, hot or cold).	Prohibited		These are fundamental to production of war material such as shell steel, cold-finished tubing for aircraft projectiles, bearing steel, bombs, etc.
19. Buttweld mills	No limitation	Buttweld pipe to 4 inches	Minimum size to produce pipe for domestic economy. Size required to 10 inches to be produced from skelp. Sizes 10 inches to 18 inches to be produced from plates rolled in 66-inch mills.
20. Lapweld mills	18 inches	Lapweld pipe to 18 inches	Do.
21. Electric weld mills	do	Electric weld pipe to 18 inches	Do.
22. Hammerweld mills	Prohibited		Not required for domestic economy. Easily convertible to manufacture of steel rectifying columns and heavy-pressure vessels necessary for chemical and gasoline industry.
23. Seamless tube mills	do		These mills are of great importance in waging a war. The product can be used for bomb pipe, aircraft frames, gun barrels, and many other war materials.
24. Rod mills	No limitations	Rods and all wire products	Required for domestic economy. Of no great importance in waging a major war.
25. Wire machinery	do		Do.
26. Coating and treating facilities for tin, terne and black plate, and galvanized sheets.	do	Tin mill and galvanized products	
27. Sheet and tin mills, hot and cold	48 inches	Sheets to 44 inches and tin-mill products.	Do.
28. Strip mills, hot and cold	do	Sheets and strip to 44 inches	Minimum size for producing sheets and tin plate.
29. Wheel mills and presses	Prohibited		Operation requires use of 10,000-ton forging press which can be used for guns, large projectiles, ship shafting, and many other large forgings used for war purposes. Cast wheels can be substituted.
30. Tire mills	No limitation	Tires for locomotive and car wheels	Required to provide steel tires for cast wheels.
31. Forging presses	1,000-ton and 4-foot working clearance.	Forging within ingot limitation of 4,500 pounds.	Minimum size for domestic forgings within limitation of 4,500 pounds. Larger capacity with wider clearance could be used for armor plate, shafting for battleships, cruisers, large-caliber guns, etc.
32. Forging machines	3-inch die opening	Machine forgings to 3 inches	Minimum for domestic economy.
33. Foundries, iron and steel	Cranes and all handling facilities restricted to 10 tons capacity.	Iron and steel castings up to 7 tons rough weight.	Do.
34. Forging hammers	7,500 pounds	Forgings within ingot limitation of 4,500 pounds.	Minimum size for domestic forgings within limitation of 4,500 pounds. Larger capacity with wider clearance could be used for shafting for battleships, cruisers, large-caliber guns, etc.

D. Necessity for Continuing Controls

The preceding subsections have dealt exclusively with specific prohibitions that must be put upon German industry in order to prevent the production of arms, ammunition, and implements of war. They have listed those military items the production of which must be prevented and the types, facilities, tools, and equipment which should be removed completely as unnecessary to civilian industry. But when these measures for demilitarizing German industry have been carried out, there still remains the problem of making certain that no resumption of military production takes place. As long as substantial occupying forces are kept in Germany, a significant revival of military production will be unlikely. Once the German governmental machinery has been restored and the troops have been withdrawn, however, other measures must be adopted to assure continued security. The Ad Hoc Committee made unmistakably clear the absolute necessity of providing for post-occupation controls which will effectively prevent Germany from initiating a program of rearmament.

Necessary measures for assuring effective continuance of the military disarmament attained during the occupation fall into three categories:

1. Those Government institutions which organized and maintained programs of military production must be extirpated and prevented from reforming under any guise whatsoever.
2. Formal agreements among the Allied Powers and between the Allies and Germany must be adopted to make absolutely clear that the initiation of any measures pointing toward the production of forbidden items will be followed by prompt and drastic measures to enforce compliance with the provisions of the disarmament programs.
3. Adequate techniques of surveillance and strong measures for forcing compliance must be adopted and maintained continuously.

1. *Government institutions.*—The core of an industrial war program is a central organizing agency with the will and the power to direct scientific research, industrial development, and production into the necessary channels. Organized guidance and ample financing are essential to the systematic procurement of military products. Those German institutions which have been, or could be, used to accomplish these purposes must be abolished, and the Allies must be steadily alert to ward off any attempts to reestablish the same or similar institutions. (See sec. IV of this report.) Particular care must be taken to ascertain that the dissolution of dangerous organizations is real and not merely formal; it is the functions more than the table of organization, the titles, or the individuals which must be watched. A military planning group must not be allowed to plot under the guise of a research agency; scientific experimentation and development of new weapons must not be allowed to go on in laboratories ostensibly engaged in private research on civilian goods.

The Allies must be determined to take thoroughgoing and firm measures to prevent the German General Staff from being maintained under an innocent front in government offices, as happened after the last war. They must obtain and maintain sufficient control and

surveillance over government expenditures to be able to prevent the appropriation or disbursement of any funds by the German Government for the purpose of maintaining any establishment whose purpose is to plan, design, manufacture, acquire, or operate any implement of war. They must be alert to see that no quasi-military organizations of speciously harmless appearance are formed, which would serve to train Germans in military practices. In short, they must not only destroy German organizations which aided and supported the armament program but must exert unremitting vigilance to prevent the reestablishment of organizations designed or able to remobilize German industrial and human resources for aggressive ends.

The Committee laid particular stress on the essentiality of Government aid and organization in the development of an aircraft industry, and by the same token warned that special attention must be paid to making such organization impossible. It is necessary, they pointed out, to prevent—

> the manufacture, ownership, storage, or operation by the German Government, or by any public or private agency under German Government control or jurisdiction within Germany or outside of Germany, of any aircraft or aeronautical training devices, or the components thereof (except only such *operation* of civilian aircraft and facilities therefor as are provided for in the next point).

And also to—

> establish an international agency for the control, management, and operation of all "civilian" flying in and over German territory and for the control of all ground services for aircraft, and make *all* flights both "civilian and military" by *any* nation in that territory subject to a traffic control organization operating under the direct control and regulation of the international agency.

2. The extirpation of German institutions contributing directly to the development of a war potential can be finally achieved only if there is firm and continued agreement among the Allies and between the Allies and the reconstituted German Government. The Allies must determine the measures of continuing disarmament upon which they will insist, and they must consummate formal agreements incorporating these measures into a charter of security for the people of all the world to read. They must use these agreements as the basis for a solemn commitment by a new German Government to adhere to the disarmament policy and to spell out those industrial and institutional provisions, the violation of which will be considered as indicative of renewed aggressive intentions and hence as an act of war. The German Government must incorporate into its legal system laws designed to give German authority to the measures of disarmament to which it has agreed to adhere. The German Government must provide for prompt and drastic penalties for individual or group infractions.

But sole reliance cannot be placed upon the Germans to enforce these measures. A permanent disarmament commission must be established and given all necessary powers to assure rigid compliance with the international agreements and with the German laws promulgated in accordance with the treaty. This is the body upon which the Allies will put primary reliance. But they must realize that its effectiveness will be entirely dependent upon the firmness with which

they determine under no circumstances to countenance steps which might be considered violations of disarmament.

3. The enforcement of these agreed measures can be assured only if an adequate system of surveillance has been established and if techniques for enforcing compliance have been evolved. Any large-scale attempt at rearmament would be readily noticed, but the important thing is to adopt intelligence techniques which will make it impossible for things to come to such a pass without Allied knowledge. Careful surveillance is particularly necessary in the field of scientific research and development. With the threat of new techniques for the use of atomic energy, adequate safeguards in this sphere become doubly imperative.

The permanent disarmament commission would of course serve as a focal point for surveillance activities. Members of the commission would have to be given power to investigate industrial establishments at will and without prior notification. But they could not be expected to cover the entire industrial aggregate of Germany. Accordingly, the Ad Hoc Committee recommended ancillary techniques, which should be regularly applied, none of which are in themselves sufficient but which taken together should prove effective in keeping the disarmament commission fully informed on all significant developments within Germany.

(*a*) *Government reports.*—Although statistics and reports made by the German Government would be susceptible of falsification, the government should be required to submit reports at intervals not exceeding 1 year. These reports should cover subjects such as Government budget allocations and actual expenditures; production of basic materials; employment in industry by industrial classifications; type lists of items produced; imports and exports. The permanent disarmament commission would retain a healthy skepticism of the accuracy of these statistics, but it could well use them as bases for further investigation; and discovery of falsification would in itself serve as indication of intentions not in keeping with the disarmament agreements made by the German Government.

(*b*) *Independent collection of relevant data should be maintained regularly by the disarmament commission.*—It should set up a system for regular collections of key information by its own members. In addition, it should use those agencies normally used by governments in international relations to obtain supplementary information and to provide checks upon data obtained from the German Government and by the commission itself. Such agencies would include embassy staffs; commercial, military, naval, and air attachés; consular officers; industrial visitors; tourists.

(*c*) Some of the activities which should be observed are listed as follows:

Radio broadcasts, motion pictures, rumors, and gossip.

Car loadings, traffic on highways, waterways, and railways.

Construction or modification of plant structures.

Movement of labor groups and changes in employment practices.

Installation of new roads, canals, railways, electric power lines, water mains, sewers, etc.

Formation of organizations or associations, and merging of industrial activities.

Training of youth.

Formation of any military or militia organization.

E. Conclusion

If all these things are done regularly and firmly, it should be possible to prevent any significant evasion of the proscription of arms manufacture. Given the will and the organization, Germany could make implements of war with whatever civilian industries are permitted to continue. But no large-scale program of war production can be carried out without the connivance and active encouragement of governmental organizations, and no serious manufacturing could long pass unnoticed. The Ad Hoc Committee made clear that constant surveillance and a determination not to permit any infraction of the disarmament regulations were the essential elements in long-term security:

> Because most of the implements of war can be produced with facilities in a civilian-industries aggregate, an undercover staff organization, with the collaboration of industrial leaders and Government encouragement, could succeed in producing and storing considerable quantities of war materials if vigilant surveillance is not maintained after the occupation forces are withdrawn. The nature of the activities and products is such, however, that it should become apparent in the future, *as it has always become apparent in the past*, before production rates or stock piles reach such proportions as to constitute a serious threat. The existence of such activities and products is hard to conceal from experienced and alert observers.

The development of the atomic bomb since the Committee wrote these words strengthens rather than weakens their conclusions. If the Allies maintain regular surveillance of scientific and industrial activities within Germany, they will have the needed information to prevent the development of a war potential. If they allow their will or their attention to flag, the cloak of harmless civilian industries could be drawn over the production of dangerous weapons.

Recommendations for the continued control of other phases of German rearmament are discussed in detail in the relevant sections of the FEA program (see particularly the sections on postoccupation controls, scientific disarmament, and institutional disarmament). The types of measures needed have been outlined briefly here so that there may be no mistaking the essentiality of adequate long-term controls for the prevention of the direct production of arms, ammunition, and instruments of war. Prohibitions will of themselves avail little. Without careful plans which prove to the Germans our unqualified determination to prevent any rearmament preparations whatever, and without adequate means of carrying out these plans, we cannot obtain that international security at which the measures outlined at Potsdam aim.

81776 46 — 7

SECTION II. AN INDUSTRIAL DISARMAMENT PROGRAM: THE ELIMINATION OR CONTROL OF GERMAN INDUSTRY USABLE FOR WAR PRODUCTION

CONTENTS

	Page
A. Introduction—The basis of the policy of German industrial disarmament	85
B. The principles of the FEA program for industrial disarmament and a summary of their general application	88
1. An outline of general principles and objectives	88
2. Summary of the proposed application of the principles of industrial disarmament	91
3. Some corollaries of the FEA industrial disarmament program	103
C. The pattern of Germany's industrial rearmament for World War II—the targets for industrial disarmament for World War III	108
1. Initial preparations for World War II	108
2. The expansion and mobilization of Germany's heavy industry base for World War II—target No. 1	111
3. The drive for self-sufficiency in critical materials for war—target No. 2	116
4. Economic and industrial domination of neighboring countries—target No. 3	118
D. The FEA Industrial Disarmament Program—industry by industry	119
1. The automotive industry	122
2. The bearings industry	123
3. The chemicals industries	123
4. The common components industry	132
5. The electronic equipment industry	134
6. The forest resources and forest products industries	135
7. Iron and steel industry	137
8. The light metals industry	143
9. The machinery industry	146
10. The machine tools industry	147
11. The nonferrous metals and strategic minerals industry	150
12. The optical instruments industry	151
13. The petroleum industry	152
14. The power industry	153
15. The rubber and rubber products industry	156
16. The shipping and shipbuilding industry	157
17. The solid fuels industry	159
18. The transportation industry	161

Section II

AN INDUSTRIAL DISARMAMENT PROGRAM—THE ELIMINATION OR CONTROL OF GERMAN INDUSTRY USABLE FOR WAR PRODUCTION

A. Introduction—The Basis of the Policy of German Industrial Disarmament

This section is addressed to the most controversial and, perhaps, most important phase of the German security program—*industrial disarmament*. The substantive scope of programs of military disarmament and scientific disarmament is not a matter of grave debate. The institutional disarmament program and the external security program, less widely known and discussed, likewise have raised few serious substantive issues.

But the industrial disarmament of Germany has been a subject of intensive public and private discussion for over a year. It is generally recognized that the crucial problem of security against German aggression is presented in the question whether the Allies will impose restraints on the industrial base on which German ability to make war rests and what the nature and scope of those restraints shall be. Even before the FEA was directed by the President to accelerate an intensive examination into this problem, there was widespread public debate over various theories and formulas advanced by outstanding public authorities. From these public discussions has emerged a general agreement on broad policy, but they show a wide divergence of opinion on the nature and scope of the means to the agreed end.

In submitting this report, particularly as it includes this section, the FEA Enemy Branch wishes to acknowledge its debt to these public discussions and to express its complete accord with the philosophy underlying the various proposals. Despite differences in the suggestions regarding the *extent* and *scope* of the industrial disarmament measures that are advocated, a thorough reading of the various proposals reveals a general agreement that Germany must be disarmed industrially.

Need for an industrial disarmament program to do far more than prohibit direct outright production of arms, ammunition, and implements of war has been recognized by those charged with the responsibility for studying the problem and determining national and Allied policy.

In the first FEA statement on the subject, the interim report of January 10, 1945, a policy of industrial disarmament was taken as a working premise for the study project set up in response to the President's directive to accelerate economic studies on what should be done "to control the power and capacity of Germany to make war."

The Yalta agreements, published on February 12, 1945, were notable in that the highest Allied authorities directed attention for the first time to the relationship between German militarism and the industrial base on which it rests. It was said:

> It is our inflexible purpose to destroy German militarism and nazism and to ensure that Germany will never again be able to disturb the peace of the world.

We are determined to * * * eliminate or control all German industry that could be used for military production.

This objective was developed in the FEA proposed preliminary program (see appendix C) submitted in early April, and confirmed in the basic military government directives (see appendix E), approved in late April and public statements of Mr. Edwin Pauley, formerly United States Member of the Allied Reparations Commission. It was adopted in the Berlin Protocol announced on August 3 in paragraphs 3 (I), 11, 15A, and 15C. (See appendix G.)

For example, paragraph 11 of the Protocol directed specifically that:

Production of metals, chemicals, machinery, and other items that are directly necessary to a war economy shall be rigidly controlled and restricted to Germany's approved postwar peacetime needs to meet the objectives stated in paragraph 15. Productive capacity not needed for permitted production shall be removed in accordance with the reparations plan recommended by the Allied Commission on Reparations and approved by the governments concerned or if not removed shall be destroyed.

This general policy should require no labored defense or explanation in the light of our recent experience in modern total war. The only question that arises is the scope and nature of the means of restraint to be placed on the industrial base of German aggression.

A nation, to make war, must have an aggregate of industries capable of producing matériel of proper quality in adequate quantities and of supplying this matériel to the fighting fronts as it is needed. The ability to produce military end products in vast numbers and range of types depends directly upon the capacity of basic industries to supply raw materials and manufacturing facilities.

Arms, ammunition, and implements of war, aircraft, rocket bombs, jet-propelled planes, electronic equipment, and even atomic bombs can be neither manufactured nor operated unless a nation has a large and well-integrated industrial economy. Under the present technology, the major industries on which war production and supply services are based, whether by land, sea, or air, are coal and coke, iron and steel, chemicals, light metals, machine tools, machinery, bearings and other common components, rubber, liquid fuels, and optical goods. Finally, no factory assembly line will move unless electric energy is supplied by water power or coal. All these basic industries are equally essential to the manufacture and operation of goods and services required in peacetime by a modern economy. Ultimately, therefore, a nation's ability to wage war can be measured by the capacity of its industry.

The importance of industry in war was proved by the aerial strategy employed by both belligerents in the world conflict which has just ended. Factories and industrial aggregates became military objectives of the first order. The combined Allied air forces were not equal to the task of bombing every important German industrial installation, particularly when the defense developed against such attack was plant dispersal and underground location. Furthermore, certain industrial installations were less vulnerable than others to aerial attack. Consequently the bombs were directed at key points in the German industrial complex, for instance, at the Schweinfurt ball-bearing plants, the Ploesti oil refineries, and transportation lines and bridges. With so large a part of the Allied industrial base situated in the United States, beyond the range of attack in World War II, it was the Germans who developed the most extensive underground factories.

The decisive role played in war by peacetime strength in the war industries field cannot be better illustrated than by the record of the United States as the principal Allied industrial base. In 4 years its peacetime industrial machine was converted into a weapon overpowering that developed by Germany in 4 years of intensive preparation and 6 years of war. The following indexes of war production in Germany and the United States are based on 1943. (See table I.)

While the tabulation shows that Germany, despite her powerful head start, was no match for the United States, once the latter's industrial capacity had been mobilized for war, it also shows the vitality and recuperability of the German industrial economy. In 1944 Allied armies were closing in on all sides. In the latter part of the year Germany began to lose access to the raw materials and industrial facilities of some of the European countries she had dominated for 4 years. Her industrial structure was subjected to ceaseless bombing. *Nevertheless Germany had in that year a far higher capacity to produce significant categories of equipment than in 1939. The production curve in categories of equipment on which Germany was spending her last ounce of effort was still rising.* If Germany were allowed to retain its wartime industrial strength and still retained its will to war, this aggressor nation, after a few years of rehabilitation, could become far better prepared than in 1939 to renew its drive for world conquest. That it would do so, unless restrained by the power and unity of the Allies, either as a principal or as a willing partner to any other aggressive force turned loose upon the world, is borne out by the history of the last century. For these reasons German industry must remain under Allied control for a long time ahead, and its capacity to produce for war must be eliminated or drastically reduced, so as to make the tasks of control less formidable and dangerous.

TABLE I.—*Index of production of selected classes of arms, ammunition, and implements of war, 1940–44*

[1943=100]

Category	Germany [1]					United States [2]				
	1940	1941	1942	1943	1944	1940	1941	1942	1943	1944
Ammunition [3]	34.5	22.4	61.7	100	135	3	8	53	100	117
Aircraft [4]	40.7	43.9	58.2	100	151	4	13	46	100	120
GUNS AND FIRE CONTROL										
Weapons:										
Automatic infantry	39.2	74.5	72.6	100	181	4	11	57	100	88
Antiaircraft and automatic aircraft armament	.....	17.5	43.4	100	248	.....	.....	.....	.....	.....
Antiaircraft guns from 7.5 centimeters up	20.4	20.4	44.6	100	151	.....	.....	.....	.....	.....
COMBAT AND MOTOR VEHICLES										
Armored fighting vehicles	10.1	22.7	37.9	100	175	7	21	70	100	82
Ships	(5)	(5)	(5)	(5)	(5)	5	15	56	100	105
Communications and electronic equipment	(5)	(5)	(5)	(5)	(5)	1	7	44	100	121
Total munitions and Government financed war construction	(5)	(5)	(5)	(5)	(5)	8	20	68	100	99

See footnotes at end of table, p. 88.

TABLE I.—*Index of production of selected classes of arms, ammunition, and implements of war, 1940–44*—Continued

UNITS PRODUCED, 1943

Category	Germany [1]	United States [2]
Aircraft	[4] 28, 092	85, 939
Tanks	12, 108	29, 362

[1] Source: Schnellberichte zur Rüstungsproduktion, prepared by the Planungsamt of the Ministry of Armament and War Production, February 1945.
[2] Source: Production Board, Facts for Industry, series 51-3-8.
[3] For Germany, represents total deliveries.
[4] For Germany, excluding gliders.
[5] Not available.
[6] Source: War Production Board, Facts for Industry, series 51-2-1.

NOTE.—1943 represents the most nearly comparable period for the attainment of full war production by both countries. Inasmuch as the base of 100 for 1943 production denotes widely divergent figures of actual production, the number of units produced in 1943 by both countries in fairly comparable categories of equipment, is appended.

B. THE PRINCIPLES OF THE FEA PROGRAM FOR INDUSTRIAL DISARMAMENT AND A SUMMARY OF THEIR GENERAL APPLICATION

The history of German industrial rearmament after World War I reflects three basic ingredients—the provision of capacity in heavy industries far in excess of Germany's peacetime needs, the attainment of industrial self-sufficiency in materials important for war, and German economic and industrial domination of Europe. With these measures of preparation Germany set out to conquer the world and nearly succeeded. An industrial disarmament program should be designed to undo this German industrial rearmament plan consummated between World War I and World War II, the history of which is recounted in chapter C of the present section.

1. AN OUTLINE OF GENERAL PRINCIPLES AND OBJECTIVES

The basic underlying principle of the industrial disarmament program is clear—*the menace of future German aggression cannot be ended by a simple prohibition of the production of arms; in the words of the Yalta Agreement, all German industry useful for military production must be eliminated or controlled.*

The vital and intricate problem of executing this principle requires a careful choice of the means to be employed. Every important industry which contributes substantially to the maintenance of a modern industrial economy such as Germany's may contribute directly or indirectly to waging war. But there is considerable difference in the degree of importance of these industries to war. That difference in degree of importance may change with technological advances and changing methods of war.

Many industries which contribute importantly to military production are as essential in peace as in war. Unless the peacetime requirements for products of these essential industries can be feasibly supplied by imports, they cannot be eliminated completely, except upon the assumption, not yet adopted by any of the Allies, that, in addition to demilitarizing the German economy, the Allies will seek to deprive it permanently of peacetime items normally available to similar economies for peaceful uses.

There are some industries in Germany whose limited peacetime use is so greatly exceeded by their highly strategic value for war that their complete elimination seems desirable if we are to be reasonably secure from German aggression. Indeed, the products of such industries, although they have a peacetime use, almost deserve the classification of "implements of war." In some cases, these industries exist in Germany particularly for the purpose of enabling her to wage war in the face of a blockade. Their products could be secured more economically from the outside world under any reasonable system of trade.

Other industries, highly important for both peace and war, have capacities in Germany greatly in excess of the amount legitimately needed for Germany's peacetime requirements or exports it might sell under a commercial policy based on fair competitive principles.

The foregoing analysis develops a second principle—*that the simple formula of either eliminating all German industry or controlling all of it is not a satisfactory application of the Yalta formula; a selective pattern or program blending both methods is desirable.* To destroy Germany's war potential by eliminating all industry useful for war production is not feasible; mere reliance upon control of all industries alike does not properly weigh the relatively graver importance of some for war, and the great excess over peacetime requirements that exists in other industries. It would place an undue and unnecessary strain upon the control system to keep in check plant capacity that, standing idle in Germany, is a menace to world peace.

The conversion of an industrial war economy to peaceful purposes is a highly complicated process, particularly in the case of a nation such as Germany, in which the economy has been so grossly distorted for aggressive purposes. Therefore, it is simply defeatist to urge, as many have done, that what is done to disarm Germany industrially must be simple, uncomplicated, and handled by a few broad strokes of the brush. There is danger in failure to discriminate between short-term measures, such as *removal* of excess plant in the steel industry, and longer-term measures such as prevention of reconstruction of synthetic oil plant or *control* of *early expansion* of the steel industry after the removal. The first measure is bound to be a complicated one since excess capacity useful only for war exists in a large number of industries and must be painstakingly sorted out through the removal of plant and equipment. The second measure is a relatively simple one which can be easily understood and simply administered.

Therefore, we must not make simplicity a virtue in our short-term program which would be accomplished presumably during the period of occupation when the Allies are in full control of the German economy. Simplicity and a lack of administrative complication in the prevention of German aggression is an objective that can be achieved only by a major operation upon the German economy in the occupation period through a broad-scale plant removal program and the establishment and testing of a series of control measures. On the other hand, we cannot expect to maintain in the years to come the kind of detailed control of the situation that will be possible in the period of full-scale occupation. Long-term measures must be simply conceived, easily understood, and subject to precise and definite administrative processes. This reasoning brings us to our third princi-

ple—*the short-term measures of divesting Germany of her industrial war potential should not be oversimplified in terms of a few plants or industries; the period of full occupation should be utilized to clear the ground, make the tests, set up the machinery, and pave the way for a postoccupation period in which a simple system of controls will be adequate.*

It may be possible in a period of occupation and full control to take measures of far-reaching consequence. But it must never be forgotten that action taken during the occupation, however drastic and effective for the time being, may be reversed in time by the Germans after the occupation.

The foregoing brings us logically to the fourth principle—*it is important to include in any disarmament program adequate measures to control and prevent rearmament of Germany or the redevelopment of a dangerous war potential in the long-term future.*

Measures of long-term prevention require thought for the kind of machinery through which they will be carried out.

The initial operations to be executed during the occupation should be planned with an eye to laying the basis for a regime of controls which can be maintained following occupation. The ultimate objective must be a Germany industrially incapable of war in 1976 as well as in 1946.

Therefore, realistically, we must face the fact that our policy and plan must be so designed as to command the support of public opinion in the United Nations for generations ahead. The peoples of the United Nations must be brought to a full understanding of the need for an industrial disarmament program to prevent German war-making in the future. The effectiveness of either our short- or long-term control depends upon our willingness and ability to use armed force and lesser international sanctions to punish any breach.

The FEA Enemy Branch has recognized from the outset the political difficulties and potential dangers to future peace and prosperity of imposing restrictions on Germany which might be impossible to maintain with the support of world opinion. It has sought to follow a *fifth* principle—*the development of effective and lasting industrial disarmament programs that public opinion will be willing to maintain by armed force, if necessary.* It is believed that public opinion will enforce and support any reasonable program provided it can be demonstrated to fair-minded men, who have a sincere desire to keep the peace, that the program does *not* prevent the eventual establishment of a self-supporting economy in Germany, and that it *will* provide the German people with an opportunity to work their way back to a reasonable standard of living. In developing its program FEA has sought to avoid including in the industrial disarmament program any interference in the economic life of Germany except what is reasonably necessary to prevent Germany from repeating its past aggressions. It has sought to develop a program for industrial disarmament which is effective for security purposes, and which, at the same time, may become a means by which the German economy can be redirected to meet the consumer needs of the German people rather than to suit the warlike ambitions of their old leadership.

Setting these general principles against the background of German industrial rearmament between the two World Wars (see subsec. C, which follows) certain objectives emerge in clear relief. They constitute the targets of an adequate but selective industrial disarmament

program just as they were the targets of the German industrial armament program after World War I.

They are—

(*a*) Reduction of Germany's heavy industry base, grown excessive by her ambition for conquest, and prevention of its redevelopment along abnormal lines.

(*b*) Elimination of Germany's industrial or material self-sufficiency for war and prevention of its restoration.

(*c*) Elimination of German economic and industrial domination of Europe and prevention of its restoration.

To a considerable extent, these objectives are interrelated. For example, the affirmative measures undertaken to divest Germany of her excessive industrial capacity for war in certain industrial categories may also serve to eliminate her economic domination of Europe in those same categories. A complete elimination of an industry of unusual "key" importance for war may reduce the heavy industry base and also eliminate Germany's artificial self-sufficiency.

Our choice of means and measures of industrial disarmament must be designed to accomplish all these objectives. An industrial disarmament program which leaves Germany with a capacity in the heavy war industries substantially in excess of her legitimate peacetime needs, or permits her to withstand a blockade or wage offensive war without external supplies, or allows her to maintain or restore an economic domination of Europe in certain critical industrial categories must be counted a failure. The exact combination of measures chosen is less important than the question of their adequacy to achieve the objectives stated according to the general principles previously outlined.

The means at hand are many and diverse. Plants and facilities can be destroyed. Plants and facilities can be removed from Germany and reinstalled in whole or in part outside that area. Imports can be controlled; exports can be controlled; production quantities or capacity can be fixed; basic materials and utilities services can be allocated. General surveillance can be maintained with the implied threat of force if industrial operations take a threatening course. There is no lack of effective positive measures of economic control which can be utilized to attain the objectives of industrial disarmament—if we have the *will* to use them.

2. SUMMARY OF THE PROPOSED APPLICATION OF THE PRINCIPLES OF INDUSTRIAL DISARMAMENT

In subsection D which follows, there is a detailed "industry-by-industry" program for German industrial disarmament which is responsive to the general principles and aimed at the general objectives stated above. It is based upon a specific "industry-by-industry" study of the problem by the Technical Industrial Disarmament Committees whose operations are described in appendix D.

It is our purpose here to summarize this "industry-by-industry" industrial disarmament program in terms of the general principles and objectives which have been discussed.

The industrial disarmament measures proposed in this section will enforce and supplement the Military Disarmament Program (see sec. I) and the Scientific Program (see sec. III). In turn, their

execution will be strengthened and supplemented by the Institutional Disarmament Program (see sec. IV) and the External Security Program (see sec. V). These latter measures call, for example, for the abolition of governmental agencies and semigovernmental organizations responsible for mobilizing the German economy for war, and the cartels, trusts, and combines that supported the mobilization. The External Security Program deals with the elimination or control of resources forming part of Germany's industrial war potential located outside the borders of the Reich, primarily in the form of German-owned properties and assets abroad.

The industry-by-industry program for German industrial disarmament, set forth in subsection D, includes five primary measures which are directed at the targets which have been fixed. They are—

(*a*) Complete and continued elimination of some key industries of unusual importance for war or created in Germany primarily for the purpose of achieving industrial self-sufficiency for war.

(*b*) Reduction of excessive capacities in the industries important for war which are not scheduled for complete elimination.

(*c*) Establishment of industrial controls designed to regulate the aggregate of the capacity, rate of processing, and exports of the industries important for war which are to be permitted to continue on a *substantially reduced scale* in the German economy.

(*d*) Removal of plants and facilities rendered useless by the foregoing measures, in such a manner as to make them readily available for reinstallation in the countries entitled to claim reparation from Germany.

(*e*) Establishment of a control over imports and distribution of materials and products highly important in quantity for sustained military or war production operations.

These measures are reflective of an earlier statement of principles on this subject in the FEA proposed preliminary United States program for German economic and industrial disarmament, submitted on April 15. (See appendix C, par. 6.)

A detailed summary of the application of these basic measures follows:

(*a*) *Complete and permanent elimination of key industries*

The following industries should be prohibited indefinitely, all plants formerly engaged in these industries should be dismantled, all facilities specialized for use in these industries should be removed, and their future manufacture prohibited:

i. Oceangoing ships (both production and operation).
ii. Electronics (other than domestic radio).
iii. Technical and scientific optical instruments (excluding civilian cameras).
iv. Antifriction bearings (including ball and roller bearings).
v. Abrasives.
vi. Light metals (raw aluminum and magnesium).
vii. Synthetic oil.
viii. Synthetic rubber.
ix. Calcium cyanamide and synthetic methanol.
x. Heavy trucks.

These measures are in addition to the elimination or control of the production of arms, ammunition, and implements of war, including aircraft, covered in the Military Disarmament Program (see sec. I), but quite similar in their purpose and manner of execution.

The intent is to eliminate these industries from Germany in their entirety regardless of the fact that a limited segment of their over-expanded capacity for war might find a legitimate peacetime utilization in the German domestic civilian economy.

After a survey of the entire field of German civilian industry, based on the individual TIDC reports, it is felt that the complete and continued elimination of this group of key industries for war will contribute substantially to the future peace and prosperity of the world.

Some of these industries have common characteristics which justify the course of action recommended. If their products had not been available at some point for the manufacture or operation of military end products, the German war machine would have been completely stopped. Their key character is evidenced by their tremendous expansion by the German war planners.

Civilian requirements for the products of these industries can be met by imports, and more economically for the world and the German consumer in the case of certain of the items, such as aluminum ingot, rubber, and petroleum. Synthetic rubber and synthetic petroleum are high-cost industries, developed to their present stage in Germany primarily in order to achieve industrial self-sufficiency for war. A forced dependence upon the outside world for these items will render Germany highly vulnerable to a blockade, provide a potentially effective economic sanction, and in the long run greatly benefit the German consumer. To eliminate them from Germany makes good sense both from the standpoint of disarmament and economics.

Antifriction bearings and abrasives constitute small strategic industries which provide a high degree of control over a wide range of industrial operations, particularly in the field of machinery. They are vital for war machines and the production of tools necessary to produce war machines. Their elimination will not unduly increase unemployment or require any substantial amount of foreign exchange.

These two industries as well as the magnesium, electronics, and scientific and technical optical instruments industries cannot be easily controlled, according to the experts, if civilian segments are permitted to exist. Adequate raw materials (except bauxite) exist in Germany for most of these industries and their technology is highly developed. Merely to limit these industries to a fraction of their present capacity designed to meet peacetime civilian requirements would preserve industrial know-how, afford an opportunity for continued research on the manufacture of these items, and leave a base for quick expansion. Their complete elimination, forcing Germany to rely upon the outside world, is economically feasible and will destroy completely Germany's industrial self-sufficiency which was one of the great objectives it sought between the two World Wars.

The complete prohibition of calcium cyanamide and synthetic methanol are considered at length in the Chemical Program (discussed in subsec. D). In addition to constituting a measure necessary to the reduction and control of nitrogen fixation, still so important to an explosives industry, this step will accomplish a necessary preliminary to a control of other chemical industries because of their convertibility factor.

The elimination of the production or operation of oceangoing ships and the elimination of the production of heavy trucks might logically be included along with the proposal for the elimination of aircraft in the

Military Disarmament Program. The products of these three industries, while they have admitted peacetime uses of substantial importance, provide indispensable means in modern war of carrying arms, ammunition, and implements of war and the men who operate them to the points of contact. The ability to manufacture them either in small numbers or in quantity has been abused and perverted by the German people. Therefore, the only appropriate and sensible course would seem to be to make Germany dependent upon the outside world for these products or the services they provide (in the case of aircraft and oceangoing shipping).

The capital equipment of some of these industries in Germany, if made available for reparation, along with patents and technological know-how, will eliminate the dependence of many countries upon Germany for these items and thereby increase their defense potential against German economic or military domination.

An often-heard objection to industrial disarmament measures designed to eliminate German industries is that such a course would deprive Germany of her status as a potentially self-supporting economy because she would lack foreign exchange necessary to pay for the imports her economy would require.

However, the foreign exchange necessary to pay for the imports of essential civilian items which are prohibited could be met by a small fraction of the income from German exports at their lowest nonwar year levels.

The estimated costs in reichsmarks of imports essential for peacetime use for certain of these industries follow:

	Millions of reichsmarks
Antifriction bearings	36
Abrasives	10.6
Heavy trucks	60
Aluminum ingot	14
Crude rubber (to substitute for German synthetic)	30
Petroleum (to substitute for German synthetic)	61.2
Total	211.8

It is estimated that an additional 101.6 million reichsmarks would provide the nitrogenous fertilizer necessary to supply peacetime requirements after the elimination of calcium cyanamide and synthetic methanol and the substantial reduction of synthetic ammonia plants called for by that part of the chemical program which pertains to nitrogen.

In addition, small but unestimated amounts of foreign exchange might be required for the limited imports of electronic equipment and technical and scientific optical instruments which it might be safe to allow Germany to import for essential civilian uses.

All these imports plus shipping charges for any overseas carriage of imports could be easily paid for out of anticipated coal and coke exports. Germany's coal and coke exports in 1936 brought 388.5 million reichsmarks; in 1937 the figure was 625.8 million reichsmarks. Much greater quantities of coal should be available for German export in the postwar era than in those years, due to reduced demands of heavy industry.

Likewise, the amount of unemployment which would be caused by eliminating the normal civilian productive operations in these industries would be insubstantial. (See sec. XI, subsec. D, 4.)

The proposal here is not only for an initial elimination of this group of industries *but also for the continued prevention of their redevelopment in Germany in the years ahead.* It would be assumed that should technological changes make it desirable, certain of these industries might be omitted from this prohibited category *or new ones added.*

This proposal, designed to destroy Germany's industrial self-sufficiency for war through the prohibition of certain key industries, is a keystone in both short-term and long-term programs for industrial disarmament. It is a measure which the Allies can determine and execute now with assurance that they will want to maintain it indefinitely until that relatively far-distant date when it is safe to readmit Germany to the family of nations on an equality with the other nations.

(*b*) *and* (*c*) *The reduction of excessive capacities of German heavy industries important for war, and the continued control of their capacity, rate of production, and exports—a short-term program with long-term potentialities*

This measure is the core of the industrial disarmament program. All of Germany's basic or heavy industries—other than those eliminated—which have contributed importantly to the manufacture and operation of military end products will be affected. Specific programs of reduction of the capacities of these industries are included in subsection D, which follows. Capacity in these industries is to be reduced to a level adequate to serve peacetime needs of the German people for their products. The levels proposed will not permit the diversion either of capacity or production for rearmament purposes without exacting intolerable sacrifices from the German people, or damaging to a point of exhaustion the essential civilian economy which must be maintained even to support a war production effort.

The over-all objective of this reduction in capacity of Germany's war industries aggregate is to eliminate that part which has been or could be used for war purposes or for the domination of neighboring markets or economies by means of exports beyond that share which Germany could expect under a sound international commercial policy.

This reduction in capacity is as real a disarmament measure as the elimination of a machine gun assembly plant. The capacity in *excess* of that required for any normal *peacetime* use is admittedly *armament* capacity. For example, no one would dispute the proposition that the margin between Germany's current steel capacity and the amount used for domestic consumption and exports in the best year before her outright rearmament constitutes an armament capacity. War was the only purpose of the creation of this margin, preparation for or waging war was its only past use, and is its only possible future use.

Yet, to limit our concept of an *excessive* capacity to that self-evident top layer in the German steel structure is to take a very limited and short-sighted view. Long before the expansion of steel capacity by Hitler to produce ships, guns, and tanks, and the plants to make them in quantity, Germany was expanding her steel capacity for war. By cartel practices, export subsidies, and other autarchic measures Germany created an export market for steel and the products which were made of steel, such as machinery, far beyond that which she might have rightfully enjoyed under a fair trade policy. This was economic warfare as well as a struggle for trade. Its end result was

to establish and maintain a productive capacity in steel in Germany which could be diverted to war production and deprive Germany's foes of access to equivalent capacity when war intervened.

What has been said of steel holds also for many of the other heavy industries important for war, such as machine tools, machinery, heavy chemicals, optical glass, etc.

In the industry-by-industry programs which follow in subsection D, several formulas have been devised to accomplish capacity reductions.

In some cases the capacity is to be reduced to an amount sufficient to provide a stated annual production which is recommended in the FEA program. This amount may be one estimated as adequate for minimum civilian requirements or, as in the case of nitrogen from synthetic ammonia, may be lower than the level estimated for civilian requirements because of the particularly vital importance of avoiding any diversion from a peace to a war purpose. In other cases capacity is to be reduced to a level to be determined or confirmed by surveys of *minimum* peacetime requirements made *on the ground* because the statistical or factual material available on which to base FEA's recommendations was not adequate to justify a final judgment. In other cases the capacity will be reduced to an amount sufficient to process the materials made available under other programs. For example, the capacity for processing primary tar distillates should be restricted to the capacity of coal distillation plants permitted under the program for steel; for another example, the fabricating capacity for light metals should be reduced to the amount necessary to fabricate quantities of domestic scrap and imports of aluminum ingots deemed necessary for legitimate peacetime requirements.

It is contemplated that the capacity of these industries covered by this measure will be controlled to the determined levels *for the duration of reparation, or at least 10 years.* . The course of policy after that period should be determined by the appropriate Allied authorities in the light of the existing situation *at that time* and the response of the German Nation to the necessity of redirecting its national activities from war to peace.

In this sense, these proposals for the reduction and limitation of capacity and production in the heavy industries constitute a *short-term program* with *long-term potentialities.* Whether or not it would be feasible or desirable to maintain these programs for the long run, need not deter the Allies from undertaking them on a short-term basis. None of the Allied countries expect their reconversion measures to last forever, yet it is very necessary that they be undertaken if their economies are to gear themselves to peacetime pursuits. So, with Germany, it is important to undertake this essential *disarmament* measure and maintain a firm control over the expansion of these heavy war industries for a substantial time, even though it proves to be relatively short as compared with other features of the disarmament program.

Several basic reasons underlie this part of the FEA Industrial Disarmament Program. Great pressure will be continually exerted to use German heavy industries to produce peacetime products to be delivered for reparation "on a free basis." As will appear later (see sec. VII) this practice enabled Germany to maintain, modernize, and expand her capacity for war in the heavy industries after World War I. A hard and fast agreement between the Allies to prevent Germany's

reexpansion of these heavy industries, *as a disarmament* measure, should close the door once and for all in the face of the demand for reparation from their current production or for other purposes such as repayment of occupation costs.

A second reason for fixing these capacities in a rigid fashion for a decade is that it is necessary to give the German people a psychological push in the direction of developing agricultural and peaceful industries. *As long as the question of the level of heavy industries, important for war, is open or subject to change from year to year, the natural tendency of Germans, peaceful or warlike, will be to resume their former industrial pattern.* This pattern, as we have seen, is an unhealthy one for the peoples of Europe. It involves a predominant emphasis upon the heavy industries, to the detriment of the light or consumer industries which mean peace and a better standard of living for Germans and other Europeans alike.

It is a temptation to take the seemingly liberal and pragmatic position that capacities in these industries, initially reduced by removals for reparation to a predetermined level on the fairly high side, should be subject to change from year to year as new needs or outlets manifested themselves. Such a course, however, would leave an opening through which the policy of the Berlin Protocol would eventually be sabotaged. With the passage of time the interest and attention of the Allies to this problem is apt to lessen, while the pressure and drive of the Germans, who seek to restore their predominance in these heavy war industries, will increase. It is the view of the FEA Enemy Branch that Germany's excessive capacity in these heavy industries should be reduced to a level adequate to provide for minimum civilian needs and a moratorium be declared upon capacity or production increases for 10 years. During that time, the energies of the German people would be diverted wholly into the field of agriculture and peaceful industrial development, rather than being spent or diverted in attempts to expand their heavy industries.

Such a course, it is submitted, is necessary if German domination of Europe in these heavy industries is to be ended. The reinstallation of German plant and equipment in other countries via reparation, which is so important in this particular case, is not likely to be seriously attempted in those countries which still maintain systems of private enterprise if the entrepreneurs must face the prospect of German competition this year or next. Unless these new or expanded industries in other countries have a breathing spell for at least 10 years and unless it is very clear that they will not be subjected to the overpowering competition of products brought in as reparation from German current production, the expansion of these industries in other countries on the Continent will not be pursued energetically.

The same reasoning applies to the quantitative restrictions of German exports, included in this feature of the program.

There follows below a summary of the specific measures recommended in the FEA Industrial Disarmament Program to reduce excessive capacities in the heavy industries, and to control capacity renewals or expansions, rate of processing, or export. The rationale for the capacity and production ceilings arrived at is included in the justification for the program proposed for each industry in the following section (see subsec. D).

i. Automotive.—A capacity which produced in 1937 260,000 passenger cars and 62,000 trucks, and was substantially expanded during the war, is to be reduced to a level required for the annual production of 90,000 units. No exports are to be permitted and the units are restricted in weight to 2,500 pounds each in order to prevent production of heavy trucks.

ii. Common components.—Reductions in capacity and rate of operation other than those which are a direct consequence of the steel and machine-tool program, are to be determined as a result of field surveys. No exports are to be permitted.

iii. Fixed nitrogen.—Capacity is to be reduced from an estimated annual capacity of 1,000,000 tons to approximately 250,000 tons. Exports are to be prohibited and the difference between the permitted production and legitimate peacetime requirements is to be handled through imports.

iv. Nitric acid.—Capacity is to be reduced to a level required to provide minimum requirements for essential industrial uses to be determined by an on-the-spot survey. Exports are to be prohibited.

v. *Calcium carbide.*—Is to be limited to needs for acetylene gas in excess of acetylene sources. It is estimated that this amounts to about 200,000 tons a year as against an estimated war capacity of 1,725,000 tons. Exports are to be prohibited.

vi. *Chlorine and alkalis.* Chlorine capacity is to be reduced to an amount required to meet a production rate of 75,000 tons a year. This represents a reduction from an annual wartime capacity of 510,000 tons of chlorine. Annual wartime capacities of caustic soda and of soda ash were 784,000 tons and 1,466,000 tons, respectively.

vii. *Sulfuric acid.*—Capacity is to be reduced to that required to meet production limitation of about 1,000,000 tons per annum. This is measured against an estimated war capacity of 2,500,000 tons a year. Exports are to be prohibited.

viii. *Primary tar distillates.*—Capacity is to be limited to amount needed to distill tar from permitted coal distillation plants under the steel program. Production during the war amounted to approximately 2,480,000 tons of tar and 794,000 tons of benzol a year.

ix. *Steel ingots and castings.*—Capacity is to be reduced to an amount required to meet production limitation of 5,000,000 tons of ingot steel per annum, including both carbon and alloy steel. (It is estimated that annual rated capacity somewhere between 5,000,000 and 6,000,000 tons would be adequate to provide reserve for shut-downs and change-overs, etc.) Within the 5,000,000 tons per annum, not more than 000,000 tons per annum of alloy steel is to be permitted, of which not more than 30,000 shall be high-alloy steel. No exports of any of these products are to be permitted. This should be measured against an estimated output rate in a war year of 21,500,000 metric tons of ingot steel which included very substantial quantities of alloy steel and high-alloy steel.

x. *Pig iron.*—Blast furnace capacity is to be reduced to an amount undetermined which will be required to produce 5,000,000 tons of steel ingots and 000,000 tons of castings. This should

be measured against a 1944 estimated production rate of 16,000,000 tons. Exports are to be prohibited.

xi. *Iron ore.*—Annual rate of production plus import is to be limited to amount of ore necessary to produce 5,000,000 tons of steel ingots and 000,000 tons of castings, *less* scrap consumed.

xii. *Aluminum fabrication.*—Capacity to fabricate aluminum products from imported ingot or stocks to be reduced to amount required for permitted production which is estimated at between 40,000 and 50,000 tons.

xiii. *Oil refining.*—Capacity is to be limited to amount necessary to process natural crude petroleum produced at the rate of 750,000 tons a year. This should be measured against a war capacity before raids estimated at 3,100,000 tons a year.

xiv. *Electric power.*—Capacity is to be reduced to 9,000,000 kilowatts of installed capacity as against a total 1944 generating capacity of 22,000,000 kilowatts. Exports are to be prohibited after the emergency of the winter 1945–46, except that limited exports from the Rhineland-Ruhr area to western Europe may be allowed provided that such exports should not be allowed to furnish more than 5 percent of the power requirements of the receiving country.

xv. *Rubber fabricating.*—Capacity is to be reduced to the amount required to process imported rubber for civilian uses estimated at 30,000 tons a year.

xvi. *Machinery.*—Capacity is to be reduced to amount required to process 1,200,000 tons of machines a year. This should be measured against a prewar production in 1936 of approximately 2,570,000 tons, which was greatly expanded after 1936 to a figure not now ascertainable. Exports of machinery would be permitted. However, limitations on over-all machinery production plus domestic civilian requirements constitute an indirect limitation on the quantity of exports. Surveillance of exports should be maintained to prevent unduly large exports to any one country which might constitute domination of the machinery markets of that country.

xvii. *Machine tools.*—Installed stocks of finished machine tools are to be reduced from an estimated inventory of 4,000,000 metric tons to 500,000 metric tons. This would leave in Germany, approximately 240,000 machine tools.

New machine tool capacity would be reduced to an amount required to meet production limitations of 25,000 metric tons of machine tools a year. (It is estimated that this would provide about 12,000 new machine tools for replacement or new industries.) Exports of new machine tools are to be prohibited.

xviii. *Metal-cutting tools.*—The 15 largest metal-cutting tool plants and the 17 largest precision measuring tool plants are to be removed and exports prohibited. No special limitation on quantity of production from the remaining plants is to be imposed.

xix. *Optical glass.*—This includes optical and ophthalmic glass, optical plastic elements and ophthalmic lenses but excludes technical and scientific optical instruments which are completely prohibited. The capacity to produce optical glass is to be reduced to the amount required to meet domestic civilian requirements. Exports are to be prohibited.

xx. *Inland shipping and shipbuilding.*—Yard and repair facilities are to be reduced to capacity required to provide tonnage necessary for intercoastal and inland waterway traffic. No ships are to be built for export in this field. (Shipbuilding for transoceanic travel is to be completely prohibited.)

xxi. *Transportation.*—Surplus trackage, rolling stock, repair and terminal facilities in excess of the amount required to meet civilian needs are to be removed after an on-the-spot survey.

As indicated before, the cessation of the foregoing controls on capacity, production, and exports should be a matter for future determination, except that such controls, fixed now, should be maintained for the period of reparation or 10 years, whichever is longer. This system of quantitative control upon the rate of reestablishment and redevelopment of German heavy industries may be affected by many decisions or circumstances which cannot now be foreseen. For example, should the Allies decide upon a permanent separation of the Rhineland-Ruhr area and execute that determination as a condition precedent to a withdrawal from occupation control (see sec. X), there might be considerably less apprehension of German resurgence to a position of economic domination of Europe in the heavy industries field. Under these circumstances the case for accelerating the withdrawal from a detailed administrative system of quantitative production controls would be stronger, particularly in the Rhineland-Ruhr area.

(*d*) *The removal of plants and facilities rendered useless by measures for the elimination or reduction in capacity of industries important for war, in such a manner as to make them readily available for reinstallation in countries entitled to claim reparation from Germany*

The eventual execution of the measures outlined above for the elimination of entire industries or the reduction in capacities of other industries important for war will not be enough to break Germany's economic and industrial domination of Europe in these industrial categories. These measures must be handled in such manner as to facilitate removal and reinstallation of substantial quantities of plant and equipment in these industries in the countries claiming reparation, particularly those in Europe. To carry through these measures without taking into careful account questions of timing and method designed to facilitate reinstallation via reparation will be to forego a great opportunity to end once and for all Germany's domination of the heavy industries of Europe. For that reason the coordination with the disarmament program of that feature of the reparation program which pertains to the transfer of industrial plant and equipment is a very important phase of the Industrial Disarmament Program. This subject is such an important administrative matter that it has been treated separately and more fully in section VII of this report.

Fortunately the timing of the elimination and capacity reduction measures has already been established in the Berlin Protocol in a manner which fits into this feature of the program. Determinations of capacity to be removed from Germany as reparation are to be completed within 6 months of the issuance of the Protocol (February 1, 1946). Removals are to be completed from the western zone within the next 2 years, the USSR being responsible for removals

from the eastern zone for its own use and that of the Polish Provisional Government.

If this schedule is adhered to, according to the methods and procedures outlined in section VII, it is hoped that a substantial quantity of the capacity rendered excess under this program would be reinstalled outside Germany within the next few years on a basis likely to prove enduring.

The importance of this step is high-lighted when one views the relative position of German production in continental Europe in certain selected industries important for war (see table 2). In 1936 Germany, which occupied only about 10 percent of the area of continental Europe (excluding the USSR and the Baltic States), and had approximately 20 percent of the total population, was responsible for a greatly disproportionate production in industries important for war. It produced approximately 48 percent of the steel, 48 percent of the pig iron, 64 percent of the coke, 54 percent of the aluminum, 50 percent of the automobiles and trucks, 82 percent of the motorcycles, 64 percent of the machinery, 35 percent of the electricity, 34 percent of the sulfuric acids, 54 percent of the nitrogenous fertilizers, 23 percent of the chemical and mechanical wood pulps, 53.3 percent of the bituminous coal, and 82 percent of the lignite or brown coal. These figures speak eloquently of the need for a sharp readjustment in the balance of industrial power in the heavy industries field between Germany and the remainder of Europe.

It will not be a sufficient answer to this problem merely to pull Germany's position down; what is equally, and perhaps more, important, is to do it in such a way that the position of the rest of Europe in these industrial categories will be pushed up. That is the only enduring answer to German economic and industrial domination of Europe. The removal and reinstallation elsewhere of excess plant from Germany's heavy industries provide the first real opportunity since World War I for making a fundamental readjustment of the imbalance which has plagued Europe for several decades and rendered the Continent an easy prey to German economic and military domination.

TABLE 2.—*The position of German production in continental Europe in certain selected industries important for war (exclusive of Union of Soviet Socialist Republics and Baltic States), 1936*

	Area (in thousand square kilometers)	Population (in millions)	Inhabitants per square kilometer	Steel production (in thousand metric tons): Iron ore (Fe content)	Steel production (in thousand metric tons): Coke	Steel production (in thousand metric tons): Pig iron	Steel production (in thousand metric tons): Steel	Light metals—aluminum (in thousand metric tons)	Vehicles and machinery (in thousand units): Automobiles and trucks	Vehicles and machinery (in thousand units): Motorcycles	Vehicles and machinery (in thousand units): Machinery (in thousand metric tons) (estimated)	Power—electricity (in million kilowatt-hours)	Chemicals (in thousand metric tons): Sulfuric acids (monohydrates)	Chemicals (in thousand metric tons): Nitrogenous fertilizer (in terms of pure nitrogen)	Chemicals (in thousand metric tons): Wood pulp (chemical and mechanical)	Oil and coal (in thousand metric tons): Petroleum	Oil and coal (in thousand metric tons): Bituminous subanthracite (Steinkohle)	Oil and coal (in thousand metric tons): Lignite and brown coal
Proportion of Germany to total (in percent)	9.9	20.1	135.0	9.4	64.0	48.9	48.8	54.2	50.7	82.5	64.8	35.2	35.4	54.2	23.6	4.6	53.3	82.0
Germany	470.5	67.7	135.0	2,259	35,833	15,302	18,756	97	302	160	2,570	42,486	1,765	631	2,367	445	158,283	161,397
Continental Europe (including Germany, excluding Union of Soviet Socialist Republics and Baltic States)	4,724.1	[1] 336.7	.....	[2] 24,137	[2] 55,965	[2] 31,267	[2] 38,436	[2] 179	[2] 596	[2] 194	[2] 3,964	[2] 120,748	[2] 4,983	[2] 1,163	[2] 10,041	[2] 9,773	[2] 296,861	[2] 196,855
France	551.0	42.0	76.1	10,186	7,101	6,230	6,686	30	209	19	325	[3] 16,659	1,219	152	342	72	45,227	920
Italy	310.2	43.6	140.5	449	1,211	817	2,106	16	51	.....	285	[3] 13,563	958	106	139	16	806	769
Poland	388.6	34.5	88.9	148	1,616	582	1,145	.....	12	.....	60	3,082	139	32	152	511	29,748	14
Czechoslovakia	140.5	15.2	108.5	247	1,955	1,140	1,547	.....	10	2	175	3,500	.....	22	325	19	12,233	15,949
Belgium-Luxemburg	33.1	8.7	261.7	1,558	4,532	5,148	5,149	.....	2	6	.....	4,993	[4] 625	71	.....	.....	27,867	.....
Holland	35.0	8.6	246.8	.....	3,053	290	.....	.....	.....	.....	.....	1,990	.....	58	106	.....	12,803	89
Denmark	42.9	3.7	86.2	.....	.....	.....	.....	.....	.....	.....	.....	1,002	.....	.....	.....	.....	.....	.....
Finland	332.8	3.8	9.9	.....	.....	13	42	.....	.....	.....	.....	2,322	.....	.....	1,976	.....	.....	.....
Sweden	449.0	6.3	14.0	6,853	115	632	1,032	2	4	3	225	7,425	147	7	3,190	.....	456	.....
Norway	322.7	2.9	9.0	599	.....	108	.....	15	.....	.....	.....	7,985	.....	73	992	.....	297	.....
Rumania	295.9	19.6	66.6	49	63	97	220	.....	.....	.....	.....	1,419	.....	.....	54	8,703	293	1,673
Bulgaria	103.1	6.3	61.3	.....	.....	.....	.....	.....	.....	.....	.....	168	.....	.....	.....	.....	102	1,576
Hungary	93.1	9.0	97.1	94	.....	305	552	.....	.....	4	.....	978	.....	.....	.....	.....	827	7,105
Yugoslavia	247.5	15.4	62.2	225	.....	44	125	.....	.....	.....	.....	796	.....	7	.....	.....	441	4,035
Greece	133.2	7.0	53.3	134	.....	.....	.....	.....	.....	.....	.....	227	.....	.....	.....	.....	.....	106
Austria	83.8	7.0	83.5	254	.....	248	418	4	6	.....	64	2,680	.....	.....	336	7	244	2,897
Switzerland	41.3	4.2	101.3	9	.....	.....	32	14	.....	.....	260	6,051	.....	2	72	.....	.....	.....
Spain	512.0	23.9	46.7	962	[4] 496	240	287	1	.....	.....	.....	2,800	[4] 130	.....	.....	.....	[3] 7,017	304
Portugal	91.8	7.3	79.6	.....	.....	.....	369	.....	.....	.....	.....	672	.....	.....	.....	.....	217	21

[1] Estimates of population for individual countries are adjusted from censuses made in previous years.
[2] The total for Europe contains the output of only those countries for which data are available.
[3] Incomplete data.
[4] 1934.

Sources: Statistical Yearbook of the League of Nations 1937–38, Geneva; Statistisches Jahrbuch für das Deutsche Reich, 1938, 1940; Verein Deutscher Maschinenbauanstalten Statistisches Jahrbuch, 1930; Statistisches Handbuch für das Land Österreich, 1938.

(e) *The establishment of a long-term control of imports and distribution of materials and products highly important in quantity for sustained military or production operations*

It will be essential to maintain control of imports if the effectiveness of the elimination and capacity-reduction measures is not to be vitiated. In addition, it will be important to control imports of strategic materials and minerals on a permanent and continuing basis so that Germany cannot attain a self-sufficiency in these materials adequate to permit her to undertake military adventure. The pattern of excessive imports and excessive stock piling of critical materials which was characteristic of the 1930's must not be repeated. In addition, imports must be prohibited in the case of commodities produced by industries whose capacity is to be reduced to a predetermined level as an indirect measure of controlling other industrial production.

All these factors point up the necessity of establishing and maintaining a firm and realistic control of Germany's imports with some auxiliary examination of material distribution in the early period of occupation in order to check the accuracy of requirements. A summary of the import controls proposed in the industry-by-industry program described in subsection D is as follows:

i. *Imports to be prohibited.*—Calcium carbide; chlorine; caustic and soda; sulfuric acid; primary tar distillates; forest products, with the exception of special wood fiber or pulp required for high-grade papers; alumina and bauxite, except for refractories and chemicals; magnesium and metal other than minimum amounts for approved industrial uses; machinery and machine tools (except upon a showing that the needed equipment necessary for peaceful industries cannot be manufactured in Germany); uranium and other radioactive elements and their ores and compounds.

ii. *Imports to be licensed.*—Bearings; nitrogen compounds; nitric acid and synthetic methanol; pig iron; ferro-alloys; iron ore; electronic equipment; rubber (synthetic and natural); liquid fuels; technical and scientific optical instruments; heavy trucks; chromium, manganese, nickel, tungsten, molybdenum, vanadium, and their ores and compounds; and abrasives.

iii. *Imports to be the subject of constant surveillance.*—Aluminum ingot; steel ingot; optical and opthalmic glass; and a specified list of metals and nonmetallic minerals listed in TIDC Report No. 19. (See appendix D for summary).

3. SOME COROLLARIES OF THE FEA INDUSTRIAL DISARMAMENT PROGRAM

There are three important corollaries of the FEA Industrial Disarmament Program which have not been included in the foregoing summary. Yet, in a sense, they are implicit in it and it is important that the position taken in this Report on these points be made clear. These three corollaries are—

(a) The establishment of primary and subsidiary administrative measures necessary to an enforcement of the program which has been outlined.

(b) A maximum exploitation of agriculture, coal, timber, and natural petroleum.

(c) The speedy determination of the levels of production and capacity which are to be permitted and a constructive and affirmative program to get the German industrial economy back into operation in the peaceful industries and up to the levels permitted in the heavy industries which are subject to restraint.

(a) *Administrative control*

The administration of the Industrial Disarmament Program is so vital to its success or failure that in developing a substantive program, the FEA Enemy Branch has felt some responsibility for suggesting administrative procedures which it believes to be both feasible and effective. A substantial portion of the emphasis of the TIDC studies and reports was placed upon the development of simple, yet effective, administrative procedures.

Many of the men participating in the TIDC studies had considerable experience in the development and administration of industrial controls in our own war effort. (See appendix D for a list of the members and identification of their principal industrial control experience.) An attempt has been made to take advantage of this experience with full knowledge that the administrative procedures proposed may have to be changed and adapted by personnel on the ground to meet local conditions.

There is no magic in any particular set of administrative controls, provided that they accomplish the substantive objectives outlined above. Nonetheless, it is important to demonstrate that the program proposed does lend itself to execution by a series of administrative measures which are feasible in terms of personnel and resources likely to be available.

In section VIII, this subject of administrative controls has been developed fully with discussions of the following measures which are necessary to the Industrial Disarmament Program:

i. The prohibition or restriction of specific industrial operations by administrative regulation.

ii. The destruction or removal of plant and equipment proscribed by the program.

iii. The control of residual capacity and operations.

The subsidiary administrative controls necessary to the latter and most involved phase would include a licensing of new construction or rehabilitation of industrial plant and facilities, a licensing of production in those industries where production ceilings are set for Germany as a whole, and a rigid control of exports and imports. Subsidiary administrative measures to simplify and back up these primary administrative measures might include the allocation of electric energy and some basic materials, and a skillfully designed use of reports, audits, and investigations with, of course, adequate arrangements for the punishment of violators. It would not be contemplated that all this paraphernalia of administrative control would have to be maintained permanently in order to insure the execution of the Program. Some of the measures, such as the removal or destruction of excess plant, can be terminated during the period of occupation. Other measures such as the allocation of materials or electric energy which are of a subsidiary or auxiliary character may be dropped when and if adequate information on the pattern of industrial operations is secured and, in any event, are to be executed in large part by the Ger-

mans themselves. However, other primary controls such as the licensing of new industrial construction, the complete prohibition of certain industries, or the control of imports should be planned for administration on a relatively permanent basis.

These matters, while vital to the Industrial Disarmament Program, are not included as integral parts here because particular administrative measures to execute the Program must be developed primarily by the personnel of the Allied Control Council which will be responsible for their operation and administration. Therefore, the discussion in section VIII is limited to a suggestion of measures for consideration which are not offered as a positive and definite part of the program.

(*b*) *Maximum exploitation of certain resources*

This measure is proposed for agriculture, coal, forest resources, and natural petroleum.

Coal is Germany's one abundant natural resource. Both as a fuel and a raw material it serves many industries and the home. The exploitation of this resource should be pushed with the greatest energy to provide a commodity urgently needed throughout Europe, as well as in Germany. The availability of a large supply of coal for export will provide a source of foreign exchange which may be vital to the creation of a self-supporting economy in Germany. The availability of these coal exports in the years ahead will be vital to the reestablishment of industry and a normal standard of living in Europe.

Likewise, the housing shortage in Germany and the need for development of light wood-using industries require to be met by a very substantial rise in the output of wood.

The forced exploitation of Germany's relatively minor deposits of natural petroleum in the years immediately ahead will reduce sharply the need for petroleum imports at a time when foreign exchange will be at a premium.

Finally, and probably most important of all for the German standard of living, is the maximum development of German agriculture. While there is a tendency to overrate the possibilities in this field particularly after the transfer of large areas in eastern Germany to Poland pursuant to the Berlin Protocol, there are substantial resources in German agriculture which beg for development. The maximum exploitation of Germany's agricultural resources for food and fiber becomes an important and essential part in any long-term program for the German economy that includes the working principles of the Industrial Disarmament Program. Yet, in agriculture, as in industry, it is important that the course of development be in line with both security principles and sound economics.

The way German agriculture should be made to go, particularly *after* the food crisis in the years immediately ahead has been met, involves a termination of the economic autarchy characteristic of German agriculture in the grain field and a growth in lines like livestock, dairying, and intensive vegetable cultivation.

In this connection, attention is directed to TIDC Report No. 23 dealing with the postsurrender treatment of German economic autarchy in food products and the treatment of German landed estates. That report contains carefully worked out analyses of many of the economic problems implicit in our treatment of German agriculture.

The maximum exploitation of the resources outlined above will serve a variety of useful purposes.

It will provide an avenue of increased economic activity of benefit to the German people and, via exports or reparation, the people they have despoiled.

Maximum exploitation of forest resources and natural petroleum for a period of years would have a substantial disarmament value, pulling down Germany's reserves in these two fields. The reduction of Germany's forest reserve to a normal figure will serve to frustrate the German policy of stock-piling standing timber for emergency war use on a large scale in a highly developed chemical industry. In the case of natural petroleum, exploitation at a high level will deplete Germany's limited reserves and strengthen that part of the program which would make the nation dependent upon external sources for liquid fuels.

Maximum exploitation of these resources will provide employment for large numbers of workers not needed in industries whose operations are reduced under the Industrial Disarmament Program. In this connection, it is not urged that artificial measures be used to force the development of German farming on any basis that would tend to create a rural slum. It is believed that the development of German agriculture in certain fields, for example, livestock and dairy production and intensive vegetable cultivation, will absorb additional quantities of manpower and, in the long run, be beneficial to the German agricultural economy. It is believed necessary and is recommended (see sec. IV) that the German landed estates be broken up and the land used to develop small but adequate farms. It is to be hoped that any available unused land, other than that in the landed estates, will be developed for agriculture. It is *not* believed that it would be a wise policy to tie industrial disarmament to any administrative or control arrangements based upon the major premise that a substantial number of millions of *additional* families of former industrial workers will be forced to depend upon subsistence farming on unduly small acreages for their livelihood. As will be indicated later, the FEA Industrial Disarmament Program is not based upon and does not depend upon such a corollary measure. It is our assumption that a very substantial number of additional persons can be absorbed in coal mining, lumbering, and agriculture. However, the field of peaceful industries offers the greatest opportunities of new employment on a reasonable standard to German workers hitherto employed in Germany's overexpanded heavy industries.

(c) *The restoration of the German industrial economy on a basis that permits and encourages the development of "peaceful industries"*

A third corollary of the FEA Industrial Disarmament Program is a speedy determination of the levels of production and capacity which are to be permitted in the heavy industries and an affirmative program to get the German industrial economy back into operation sufficiently to permit reestablishment and development of the peaceful industries.

A speedy determination of the levels of production and capacity in the industries permitted under the disarmament and reparation programs is important for several reasons. First, the lack of decision concerning the specific industries to be eliminated completely and

the levels to which certain industries important for war are to be reduced tends to paralyze that section of the industrial economy which might be reestablished and go forward under the disarmament program. Second, it delays the establishment of an adequate control system which would operate on the assumption that a substantial segment of German industry will resume activities under careful control. The impact of this lack of decision on the Industrial Disarmament Program, is adverse on both counts. The public opinion of the peoples of the United Nations and the Germans themselves begins to associate industrial disarmament with a continued paralysis of German economy. This is altogether wrong. It can best be corrected by specifically outlining publicly the precise restraints of the Industrial Disarmament Program and encouraging the development of German industry where it is not in conflict with this program.

It is the position of this report that the Allied Control Council should encourage both the reestablishment of peaceful industries and the operation of the control industries up to the ceiling fixed by the disarmament program. Specifically, it is important to decide that German steel capacity and production are to be reduced to specific tonnages, announce that decision, and then undertake both the steps necessary to control production and reduce capacity to the amounts fixed and encourage production up to the ceilings indicated. It is felt that every effort should be made to put upon the Germans themselves the burden of reestablishing peaceful industries and getting controlled industries to going at the levels of production permitted. But, until a German government is restored along with adequate instrumentalities for coordinating the economic effort of the various zones, the Allied Control Council and the occupying powers must take some of the responsibility.

It was the position of the FEA in its preliminary United States Program for German Economic and Industrial Disarmament, proposed last April 15 (see appendix D) that—

> The Allied Control Council shall develop a plan for the utilization of manpower, materials, and facilities rendered idle by reason of the limitations and controls described above for industrial disarmament reasons. This plan should be designed to canalize these resources into peaceful pursuits that will keep them usefully employed for production of goods and services for home consumption and reparations, consistent with the Industrial Disarmament Program. Whenever German agencies or administrative services are needed to assist in the adequate performance of the foregoing task and they have ceased to function, they shall be revived or replaced as rapidly as possible. Before utilizing German agencies, military government authorities must carry through a program of denazification.

The FEA Enemy Branch has not undertaken the development of an affirmative program to reestablish the German economy along the lines indicated. That task was beyond its terms of reference and could be much more effectively performed by the Allied Control Council with its constituent national groups such as the United States Group Control Council. However, section XI of this report outlines the way in which such an affirmative program might be developed yet be consistent with and complementary to the FEA Industrial Disarmament Program.

In this connection it is our opinion that critics of German industrial disarmament constantly confuse the impact of such a specific program of industrial disarmament on the European economy with the impact on Europe of a completely paralyzed German industrial economy.

To be sure, a Germany whose economy does not function is a substantial handicap to the restoration of the economies of the neighboring powers. However, the accomplishment of the FEA Industrial Disarmament Program does not require a continued stoppage of all German industry or even German heavy industry. It calls for a reconversion of the German industrial economy along peaceful lines and is entirely consistent with the reestablishment of the heavy industries, with certain exceptions included in the category for complete elimination, on a reduced peacetime scale and with the reestablishment and development of peaceful industries to any desirable economic level. A more accurate appraisal of the relationship of such a program to the European economy than that usually supplied by critics of German industrial disarmament is contained in section XII.

C. The Pattern of Germany's Industrial Rearmament for World War II—The Targets for Industrial Disarmament for World War III

Germany, as we now know, began to prepare for World War II some months before her defeat in the First World War. Plans were under way 2 years ago for yet a third attempt at world domination.

> What does a provisional defeat matter to us if * * * we have obtained a margin of economic and demographic superiority greater than before 1939?—

asks a German General Staff memorandum written in 1943—

> The conquest of the world will require many stages; the essential thing is that the end of each stage brings us an economic and industrial potential greater than that of our enemies.

Too little information is available to judge precisely how far the German General Staff and its industrial collaborators planned and promoted certain situations in the years immediately after World War I and to what extent they merely took advantage of them in putting their program into effect. But the Staff's operations were already so apparent at the end of 1923 that the British Brig. Gen. John H. Morgan, of the Allied Disarmament Commission was able to state:

> Germany has now got ingeniously camouflaged, that economic General Staff which was the dream of Rathenau * * * and the whole of the key industries of war * * * coal, tar products, sulfuric acid, nitric acid, aluminum, and all the rest * * * have been reorganized, subsidized, and controlled to this end. The whole of German industry and production have been reorganized by some astute and able brain with a view to making her independent of overseas supplies of material in the next war. Even her rolling stock for ordinary commercial traffic has been altered to a new type capable of immediate conversion to troop trains.

Understanding of German attempts at industrial rearmament after the last war provides a key to the measures of industrial disarmament now necessary if international security is to be obtained. To those who contend that the Industrial Program outlined in this section is unnecessary, the historical record provides a complete answer.

1. INITIAL PREPARATIONS FOR WORLD WAR II

From the time defeat in the First World War became inevitable, the German General Staff and its industrial collaborators began to plan how advantage could be taken at each turn in preparing for the next war.

On the surface the situation seemed hopeless for German industrial rearmament. Lorraine and its iron ore had been restored to France and other larger regions had been lost with their industrial and agricultural resources and important war industries. It had been discovered that much of the German industrial plant was obsolescent. Equipment was out of date and various units of many plants had been built without attention to an efficient movement of supplies and parts. The large merchant marine and navy were gone, as were foreign assets in many countries. The public debt had reached staggering heights and under the peace agreement Germany was pledged to pay reparations in an enormous and unspecified amount.

But Germany had also important advantages. By discarding the Kaiser and hiding behind a republic headed by politicians willing to cooperate, the General Staff had, at one stroke, staved off Allied occupation of the whole country, quieted domestic unrest, and put on a mask that won sympathy abroad for Germany.

The character of the armistice had enabled the Germans to hide or ship to neutral countries gold, foreign exchange, important formulas and blueprints, and machine tools important for manufacture of munitions. Even large airplane plants had been completely transferred to neutral countries. German plants and other assets in these and other countries had not been touched.

By a calculated destruction of French mines and mills after the armistice negotiations began, and other vandalism in the east, the General Staff had created a situation in which most of Europe must turn to unravaged Germany for manufactures.

The peace terms proved to be a sieve, in which a number of the holes had been punched by the Germans themselves. Germany had been permitted to maintain a professional army of 100,000. The German rulers had achieved this by publicizing postwar political riots as examples of the bolshevist terror that would sweep across Germany and engulf the Allies if there were no German Army to stop it. And they violated the letter and the spirit of this regulation in every possible way. By means of the Black Reichswehr and temporary volunteers they trained larger numbers of men. The permitted professional army was developed in such a way as to provide cadres of officers on the basis of which the army could be enlarged with lightning speed at an appropriate moment.

Having obtained an army, the Germans next got permission to manufacture equipment for it, with only a few weak restrictions on the quantity and types to be made. All war-plant capacity in excess of the amount needed to supply the permitted army was to be surrendered to the Allies, but no attempt was made to define a war plant, and practically all mills and factories—including many built during the war—were readily convertible to the production of peacetime goods.[1] Manufacture of military planes was forbidden, but there were no restrictions on aircraft for peacetime purposes.

Moreover, the lack of many important raw materials, a wartime handicap, was a useful asset in time of peace, in spite of the foreign-exchange problems it created. The amount of raw materials a highly

[1] Krupp was able to retain even the deep-boring tools used in manufacture of the Big Berthas on the plea that if they were removed, it would be impossible to make replacements for the chemical nitrogen plants "essential to supply German agriculture with fertilizer." They were immediately used to expand the chemical-nitrogen and synthetic-methanol capacity and a little later to prepare equipment for manufacture of synthetic gasoline.

industrialized and prosperous Germany could buy from each of the Allies became an index of the extent to which each could be persuaded to aid Germany and help her overcome the treaty restrictions.

Under the Versailles Treaty, the General Staff was to be abolished. But members merely removed the red stripe from their trousers and took up offices in various Government agencies where they could work without attracting attention and at the same time further the program of war preparation they had in mind. The military group that had wrestled with the problems of war economics after 1914 became the most active part of the hidden General Staff. These men already knew what weaknesses had to be overcome when they assembled to draw up plans for the next war in collaboration with the industrialists and other groups sympathetic to the pan-German ideology.

Their program of war preparation embraced—

1. The training of carefully selected officers and officer candidates in war economics, as well as the education of these and other men in the usual branches of military science;
2. The freeing of Germany from war debts and reparation;
3. The provision of funds to increase the German war-production potential;
4. The reorganization of industry essential to war, the expansion of its capacity, and the modernization of its equipment;
5. Research and experiment, not only on munitions, but also on substitutes for the raw materials Germany lacked, and the construction of plants for manufacture of such substitutes in quantities adequate for wartime requirements;
6. The rebuilding of the merchant marine and the building up of an air fleet, both to be convertible to war purposes;
7. The modernization of railroad equipment and facilities, and the construction of strategic highways;
8. The centralization of control of the whole productive apparatus;
9. The institution of tight economic and social controls well in advance of the outbreak of war to prevent confusion in the critical period of initial attack.

A training center for officers was achieved easily and at once. Since the Allies had not attempted to limit the supply of German engineers, the General Staff placed officer candidates in the technical institutes. The main center was in the institute at Berlin-Charlottenburg, which had one of the best engineering faculties in the country and an excellent economics staff.

The course of study for future military economists included efficient use of manpower, the problems of raw materials supply, production management, industrial standardization, war finance, and, eventually, a year of practical experience in plant management and one or more tours of industrial centers of the United States.

Berlin-Charlottenburg graduates were usually assigned to mills and factories vital to war production, where, under arrangements made between the industrialists and the General Staff, they participated in experiments on new types of armament and other military supplies. Others occupied key positions in various Government agencies, especially the Ministry of Economic Affairs (*Reichswirtschaftsministerium*). When preparation for war reached its final phase under the

4-year plan—publicized as a Nazi inspiration to make Germany self-sufficient—Berlin-Charlottenburg graduates appeared prominently as heads of planning sections and on the boards of public corporations.

2. THE EXPANSION AND MOBILIZATION OF GERMANY'S HEAVY INDUSTRY BASE FOR WORLD WAR II—TARGET NO. 1

(a) The use of inflation to concentrate control of and expand heavy industry

The financing of industrial rearmament was materially aided by the inflation, which spread slowly, with gains for the program at each step, and finally skyrocketed to a point where it so seriously disturbed international money markets and trade that the Allies were blackmailed into reviewing the reparation arrangements and even into promising governmental loans. Although Germans dependent on pensions, income from bonds, and the like were made destitute, and smaller businessmen were driven into bankruptcy, the State and National Government and many big corporations emerged free of debt. Moreover, the chief stockholders of these corporations, who were also their administrators and had large banking interests, used inflation to build up economic domains extending into almost every field of the national economy.

Inflation was also manipulated to rebuild and expand all basic sectors of German industry. Government IOU's were distributed to the corporations that had lost important war plants through separation of territory; these were used to acquire coal mines and build new and larger mills and factories at places agreed on with the Government; by the time the Government honored the obligations, the mark had depreciated to a point where its value was only a fraction of what it had been when the promise was made. Businesses lost as a result of these practices were often added to the holdings of the big manipulators.

Foreign speculation in the mark was also promoted with such success that enormous quantities of foreign exchange were acquired by Germany. These moneys were not used to stabilize the domestic economy. On the contrary, large sums were spent in acquiring foreign properties, especially stock in companies that had taken over German patents confiscated by the Allies during the war. It has been estimated that between 1919 and 1924, one-half to two-thirds of all reparation payments, and of the cost of imports in excess of exports and of the regained foreign holdings, cost Germany absolutely nothing.

The inflation was so skillfully managed that the British Gen. John H. Morgan, for 4 years a member of the Inter-Allied Control Commission, felt it necessary on his return to warn his compatriots that Germany had used the inflation to prepare for another war and was already better equipped than in 1914.

(b) The use of reparation from current production and foreign loans to expand and modernize the heavy industry base (1920–29)

Nonetheless, in return for stabilization of the mark, the Allies promised the Germans the loans they had been seeking to offset their shortage of working capital. Movement of capital across national boundaries and the provision of funds to nations lacking capital for industrial development normally contributes to world prosperity. In

this case, the loans to Germany did help industrial activity in Germany and in Europe. But the Allies took no responsibility for the manner in which this capital was utilized. They made no attempt to insure that it should be used to develop those industries most needed for the welfare of Europe as a whole. They paid no heed to the obvious danger that industrial expansion of Germany would mean an increase in her war potential, that if the German Government came under control of leaders with aggressive intentions, they, the Allies, would have contributed to the military might of their opponents.

The loans were made and helped to bring about a boom in German industry. Private corporations and German states and municipalities were easily able to borrow additional funds from abroad. The German industrial plant was modernized and expanded.

Reparation, scaled down following the inflation, also proved useful to the Germans in building up their industries. Since the Allies were unable to transfer all reparation funds, they had to take reparation in kind. Although the Germans objected to this at first, they soon realized that anything that kept industry expanding was to their interest.

By 1929, when the stream of foreign investments had grown thinner, the war planners could look back on many accomplishments:

The coal reserves had been developed extensively and much of the coal mining and coal preparation equipment had been modernized.

Coking and coal-tar distillation facilities had been enlarged and improved; and synthetic gasoline was being produced from coal.

The capacity of the iron and steel industry was already more than adequate for the peacetime needs of the country, and prospects were good for an American loan of at least $100,000,000, further to expand the facilities of Vereinigte Stahlwerke. This would give ample capacity to supply construction materials for the industries whose products would not be needed until war was declared and also to meet wartime requirements.

The capacity to produce electric power had also been greatly increased. Only about 3.5 billion kilowatt-hours had been used in 1913. Nearly nine times as much was being used in 1929, and further development was in progress on a program that would cover the country with a grid. The generation of power with brown coal, particularly in central Germany, was increasing with improved furnaces; this lessened the demand on Ruhr coal. Plans for a gas grid had been made and expansion of the gas industry was under way.

American automobile manufacturers had been persuaded to set up large modern plants in Germany. One was already in operation. A second was still in negotiation.

The machine and machine tool industry had been maintained at about its 1918 rate of production, thanks to the plant-modernization program and the reparation in kind; and designs had been improved.

By 1929 the Allies were satisfied with the situation, ignoring the investment character of the German boom and the war potential that had been created with their aid. Annual payments of reparation had reached the agreed peak and the interest on loans was being paid promptly. The Allies were easily persuaded again to review the reparation question and to consider withdrawal of all Allied supervision. Since practically the only vestige of control outside the

Rhineland, which was occupied by the French, was exercised by a reparation agent-general who negotiated the contracts for payments in manufactures and services and kept the reparation accounts, neither reparation nor financial control was the real German objective. The goal became apparent when agreement on the total to be paid to the Allies had been reached and it was promised that the Germans themselves should henceforth have all responsibility for meeting the payments; the Germans refused to sign unless French troops left the Rhineland.

(c) The expansion of the heavy industry base by the Nazi regime

Even during the first year of the Nazi regime, when drastic social, political, and economic changes were already going on at a rate that would have frightened industry in other countries, the last stage of the war-preparation program was smoothly initiated and industrial activity began a quick climb to levels much above those reached in the boom year of 1928. Much industrial-plant construction was still necessary. It had been found that some of the basic plants built or enlarged in the 1920's were too small to meet the mounting demands for their products, or had equipment that was already outmoded. The coal mines were still insufficiently mechanized to meet probable wartime labor shortages successfully. The wartime demands for coal-tar derivatives had been underestimated; more ovens and distillation units had to be built. As the possibilities of air warfare grew, the size of the air fleet was increased; this raised the requirements for aluminum, a product for which capacity was only slightly larger than in 1918.

Each unanticipated expansion of one industry put new burdens on the capacity of those that supported it. More aluminum manufacture made more electric power necessary. When new magnesium plants were built (in part because magnesium could replace aluminum for many purposes if the supply of bauxite were cut off), there was still another sharp rise in power requirements. Consumption of power in 1937 reached 49,000,000,000 kilowatt-hours.

The aluminum-production capacity that had been around 40,000 metric tons a year from 1925 to 1933 reached 209,000 tons in 1939. Magnesium capacity by that time was around 20,000 metric tons a year.

In some cases unanticipated demands could not be met as quickly as was desired. For example, a fairly satisfactory synthetic rubber was finally achieved late in 1936; but it was nearly 2 years before production could begin on any considerable scale because of the unexpected need for more calcium carbide and certain other items.

Such shortages, however, were usually met rapidly, especially in fields where a program of quick expansion on the eve of war had been long under consideration. The production of synthetic oil, started in 1927, but held down because of the high cost of the product, easily reached 300,000 metric tons in 1935 and 1,500,000 tons in 1939. The 1939 output was doubled 2 years later.

Another product whose requirements were met well in advance of need was rayon. In 1932 Germany was making only about 25,000 metric tons of continuous filament and 3,000 of rayon staple. The goal was a combined capacity of 400,000 to 450,000 metric tons, a figure that represented the difference between the estimated wartime

minimum fiber requirements of Germany and the amount of natural fiber she could produce. The new plants in general were placed close to a supply of wood that could be used if imports of the more suitable pulp were cut off. The pulping plant was made part of the rayon plant, to save transportation and certain chemicals. As far as feasible, each rayon plant was to make its own chemicals. The planners were reluctant to use such a capacity if it could be avoided, because of the very large coal, power, and chemical requirements for rayon manufacture, but felt it must be available in case of siege. By 1938 production reached 65,000 tons of yarn and 155,000 tons of staple, with existing capacity not yet fully in use.

The requirements of the over-all program are reflected in production figures of certain industries.

[In thousand metric tons]

	1929	1932	1937
Steinkohle output	163,441	131,996	184,513
Brown coal output	174,450	123,000	184,709
Steel output	16,023	5,562	19,336
Coal-tar output	623	972	2,228

With only subsidized exports and domestic demands to stimulate the machine-tool industry, its products in 1938 weighed about 600,000 metric tons. They had weighed about 168,000 tons in 1929.

The rise in motor-vehicle output, though less spectacular, was impressive. Germany had made only 150,133 motor vehicles in 1928; 352,369 were made in 1939. Nearly half the motorcars and 43.6 percent of the trucks turned out in the latter year were made by the two companies under American control.

That a supposedly bankrupt country heavily dependent on imported raw materials could have achieved such results is testimony to the thoroughness with which the basic economic foundation had been rebuilt in the 1920's, and to the skillfulness of the Germans in deluding the victorious Allies and using them to their own ends.

By the end of 1936 the long-planned military operations had begun, German forces were in Spain, trying out new weapons and tactics, and insuring their hold on Spain as a base on the Atlantic for overseas economic and political operations. In 1938 German armies overran Austria and Czechoslovakia, and German technicians went into those countries to integrate their economic operations with those of Germany. Skoda and plants near Vienna helped supply the arms and other materials for the attack on Poland in 1939, drawing largely on local resources for their supplies. Thus the Germany that entered Poland had a measurably higher war potential than the one that helped Franco win in Spain.

The actual war mobilization program was costly. On the basis of 1928 prices and exchange, German military expenditures rose from $0.12 billion in 1932 to $5.1 billion in 1937 and $10.3 billion in 1938. In contrast, the defense expenditures of the United States, with twice the population and four times the national income, did not until the fiscal year 1938–39 reach a billion, from which point they rose to

$89.0 billion in 1944–45. The share of industry in Germany's rising military expenditures cannot be estimated precisely, but, according to German sources, the total spent in 1937 for new construction and replacement amounted to 22.5 percent of the national income, officially stated at $28.7 billion.

The distribution of investment in Germany after Hitler seized power shows the increasingly large part played by the capital goods (heavy) industry in the German economy. (See table 3.) In 3 years investments in industry almost quadrupled; but where the rate of expansion was over 500 percent in the capital-goods sector, it was only 200 percent in the consumption-goods sector, although the latter in peacetime boom periods in most countries tends to gain more rapidly.

TABLE 3.—*Distribution of annual investment in German industry, 1933–36*

[Billion Reichsmarks]

	1933	1934	1935	1936 [1]
All industry	0.557	1.067	1.650	2.084
Capital goods industry	.309	.707	1.243	1.593
Consumption goods industries	.248	.360	.415	.491

[1] Provisional.

Source: Die Deutsche Industrie, 1939.

During the interwar years the German economy was reconstructed with but one purpose, namely, the waging of effective total war. The aims of Nazi economic policy are thoroughly revealed in the redistribution which was effected in the industrial working population. For the area of the Altreich (including the Saar) a comparison of labor force figures in 1925, a year of high industrial activity, with those of 1939 shows the extent to which labor was shifted to heavy industries and away from the extractive and consumption goods industries even before the outbreak of the war. (See table 4.) The labor force attached to the building industry also showed a remarkable expansion, due in the main to industrial and military construction work.

The stimulus of the Nazi state revived the German economy after 1933, first through public-works expenditures and later through rearmament expenditures. By 1939 unemployment had fallen to negligible proportions. The very much greater recovery in production goods was partly a natural consequence of recovery from the depression, during which capital construction sank to a low level, but was also due to the fact that the Nazis' rearmament policy required a large proportion of the increase to be undertaken for their own purposes rather than for the benefit of the consuming public. The field of consumer-goods manufacture was the single broad segment of German industry which was not permitted to expand fully under the Nazi regime.

TABLE 4.—*Available labor force in industry and handwork, by industrial group 1925–39, in Germany proper* [1]

Industrial group	Available labor force (in thousands)		Gain or loss	
	1925	1939	In thousands	Percent
Mining, salt, and turf cutting	903.0	733.6	−169.4	−18.8
Quarrying, glass, pottery, etc	696.7	654.4	−42.3	−6.1
Iron and other metals production	614.6	693.4	+68.8	+11.2
Iron and steel and other metals manufacturing	1,009.8	1,051.4	+41.6	+4.1
Machinery, boilers, apparatus, vehicles	1,323.1	1,976.3	+653.2	+49.4
Electro-technical	422.6	639.4	+216.8	+51.3
Fine mechanical and optical	152.1	192.9	+40.8	+26.8
Chemical	353.4	498.0	+144.0	+40.9
Textile	1,207.7	1,134.9	−72.8	−6.0
Clothing	1,601.0	1,334.7	−266.3	−16.6
Paper production and printing	538.7	512.6	−26.1	−4.8
Leather and linoleum	174.5	158.5	−16.0	−9.2
Rubber and asbestos	68.9	77.9	+9.0	+13.1
Timber and wood manufactures	972.4	834.4	−138.0	−14.2
Musical instruments and toys	110.0	53.7	−56.3	−51.2
Food, drink, and tobacco	1,361.0	1,462.6	+101.6	+7.5
Building and allied trades	1,727.3	2,375.2	+647.9	+37.5
Water, gas, electricity production and distribution	181.0	213.1	+32.1	+17.7
Persons not in fixed employment	252.7	15.6	−237.1	−93.8
Total, industry and handwork	13,670.5	14,602.6	+932.1	+6.8

[1] 1935 figures for the Saar are included in the data given for 1925.

Thus, Germany's peacetime industry took on an increasingly warlike character. The favored capital goods industries were the heavy industries that supplied the sinews of war—iron and steel, chemicals, machinery, machine tools. The iron and steel went into the construction of plant and equipment for the new autarchic and synthetic industries established under Government subsidy, and not, as in the United States, into devices for the pleasure and convenience of the civilian population.

3. THE DRIVE FOR SELF-SUFFICIENCY IN CRITICAL MATERIALS FOR WAR—TARGET NO. 2

In order to free Germany from the threat of blockade in the event of war or imposition of economic sanctions, research scientists and engineers were set to work to develop synthetic substitutes for natural materials obtainable only from foreign sources. High costs generally characterize autarchic industries. Many of the synthetic processes are so expensive in terms of electricity, materials, or manpower requirements that they cannot be justified on any basis except that of self-defense or offense in war. High-cost synthetic industries must be subsidized directly by governments or indirectly by way of special inducements to shareholders or owners.

Many of the substitutes are based on coal, Germany's major natural resource. Synthetic fibers, made of cellulose obtained from wood pulp and fibers made from coal by a more recent process, eventually became an acceptable substitute for the natural fibers Germany cannot produce. Since the German deposits of natural petroleum were wholly insufficient to supply fuel for the Luftwaffe and combat and armored vehicles, synthetic petroleum was produced from coal. Synthetic ammonia used in large quantities for fertilizer and used also for high explosives was obtained by atmospheric fixation through

a process employing byproduct coke. After long experiment, a satisfactory process was discovered for making synthetic rubber from coke and coal tar.

To free Germany from her heavy dependence on imported iron ore, low-grade domestic deposits were developed by the Government-owned holding company, the Reichswerke Hermann Goering A. G. No private German corporation was willing to assume the costs of this autarchic development. Another Government-owned holding company, the Vereinigte Aluminium-Werke A. G., was responsible for 70 percent of the German output of aluminum ingot, required in vast amounts for the manufacture of aircraft.

The German aluminum industry, which relies wholly on imported bauxite and uses large amounts of thermal power, is also an autarchic industry which cannot compete economically with aluminum produced where both bauxite and hydroelectric power are available. According to best estimates today, Germany's capacity to produce aluminum ingots is around 250,000 tons per annum, representing an increase from a capacity of 40,000 tons in 1933.

In 1944 Germany was producing about 1,000,000 tons of natural petroleum and about five and one-half million tons of synthetic oil in its effort to achieve self-sufficiency in petroleum and other liquid fuels. This achievement must be measured against a capacity of 300,000 tons of synthetic oil in 1935 and 300,000 tons of crude production in 1934. Germany also developed a synthetic rubber capacity of more than 100,000 tons which she still possesses.

In the field of synthetic fibers, there was an expansion of from approximately 28,000 tons in 1932 to between 400,000 and 450,000 metric tons in the later period of the war. As a result, Germany no longer had to fear a cutting off of overseas cotton supplies in time of war. She did not lack materials for textiles during World War II as she had in World War I.

Through economic autarchy, Germany built an economic base which made the country relatively self-sufficient in time of war. This base is still available; with the present industrial potential, Germany would be able to produce these critical materials for another war.

Stock-piling of imports was another important phase of Germany's self-sufficiency program. By rapidly increasing her supplies of certain raw materials, vital in war, Germany sought to insure herself against the consequences of a blockade.

Foreign exchange was necessary to buy industrial raw materials and stock pile critical raw materials which would be needed in large quantities in the event of war, or were needed in increasing quantities to prepare for war. The problem was solved by playing on the desire of other countries to export. A system of barter between nations was built up, with central clearinghouses in each country and in Germany. Germany was to pay in the imports needed by the trading partner. The less industrialized nations were most susceptible to German overtures, since they had agricultural and raw material surpluses. With this system of international trade successfully in operation, the financing of imports for war was assured. During the rearmament period, imports of certain strategic commodities rose steadily and significantly. Imports in 1933 and 1938 are contrasted in table 5. During the same period the total of all imports increased only approximately 10 percent.

TABLE 5.—*German imports of strategic commodities, 1933 and 1938*

	1933	1938
Livestock	30.9	113.0 thousand head.
Vegetable food products	869.9	1,171.8 million reichsmarks.
Iron ore	4,571.6	21,927.5 thousand metric tons.
Copper ore	240.9	653.9 thousand metric tons.
Zinc ore	79.1	185.0 thousand metric tons.
Chrome ore	47.7	176.4 thousand metric tons.
Bauxite	239.1	1,184.6 thousand metric tons.
Tin ore	.4	6.0 thousand metric tons.
Motor fuel and lubricating oils	2,702.4	4,967.0 thousand metric tons.

Source: Monatliche Nachweise über der auswärtigen Handel Deutschlands, as summarized in Foreign Trade and Exchange Controls in Germany, Report No. 150, U. S. Tariff Commission.

4. ECONOMIC AND INDUSTRIAL DOMINATION OF NEIGHBORING COUNTRIES—TARGET NO. 8

As a result of the planned expansion of industrial capacity and the practice of economic autarchy, Germany by the midthirties had overwhelming economic superiority over the other countries of Europe. As table 2 (see subsec. B) shows, Germany in 1936, with less than 10 percent of the area and about 20 percent of the population, accounted for about half, and in some cases for much more than half, of total European production in the heavy industries that furnish war potential—coal, coke, pig iron, steel, nitrogen compounds, machine tools, and machinery. In cement, sulfuric acid and electric energy, cotton and wool yarn, and paper more than a third of the production of the Continent was concentrated in Germany.

This preponderance could not fail to make Germany the dominant power on the Continent. Even in the absence of the ruthless trade practices or war threats that brought both customers and suppliers within the German orbit, no country in Europe had the industrial strength to withstand Germany. But Germany used both without self-restraint to exploit this preponderance in the heavy industries important for war. Heavy industries were expanded beyond the level required for peacetime domestic consumption or normal exports and excess production was dumped on the world market for whatever price could be obtained. This practice, notable in the machine tool, machinery, aluminum, and other heavy industries, upset established habits of trade and tended to increase the dependence of neighboring countries upon Germany for supplies in these fields. A favored device was the subsidizing of exports to enable the underselling of foreign competitors. For example, the export subsidies were so high on certain machine tools—25 percent of the domestic sales price—that many producers hastened to increase their capacities and take advantage of the situation.

Another favored device was the manipulation of barter agreements and clearing arrangements. When a country was sufficiently loaded up with German debts, it was informed that it would have to take whatever Germany had to export to get paid. Since in many cases Germany had already taken over, by reexport, some of the creditors' former foreign markets, there was no way to break away from the partnership.

German cartel practices further weakened her neighbors' powers of resistance. The production quotas forced upon national members of

German-dominated cartels retarded the expansion of the domestic industries of the countries dependent upon Germany.

The countries of southeastern Europe were special victims of German trade practices. Once they became economic tributaries, their national existence increasingly depended upon the survival of the Reich, for, in the event of European war, blockade was likely to cut them off from markets other than Germany. Their dependence upon Germany for most of their industrial products prevented their developing economic and military defenses against German encroachments.

Foreign investments also served Germany's advantage. The capital that could be spared from expenditures on military preparations in the Reich itself largely went into undertakings in countries that Germany planned ultimately to take over. The European industries promoted by German investments were those that would supplement and extend the war potential of Germany.

By the time war began, economic penetration had paved the way to military conquest. As soon as a country fell to the Germans, the Nazis put into effect plans laid in advance for the coordination of its economy with their own. The industries of the country were operated as an adjunct to those in Germany. Plants manufacturing military end products were worked at maximum capacity; others were put to work on the manufacture of components for assembly in Germany. Machinery was moved from France and the Low Countries to increase the capacity of German factories. Extensive light-metals developments were initiated in Hungary and Yugoslavia, close to sources of bauxite and water power. These were for the supply of the large new aircraft plants in Austria where there was comparative immunity from aerial attack until late in 1943. From every occupied country, the Germans drained manpower and materials for German industry.

The integration of European industry with the German war effort was an important factor in Germany's ability to withstand three heavily industrialized adversaries. Economic domination of Europe was an enormous asset.

This is the lesson of history. A sad repetition of this pattern of industrial rearmament can be insured against *only* by the inauguration and execution of a realistic and workable industrial disarmament program as outlined in this section, together with the related programs described in the other sections.

D. The FEA Industrial Disarmament Program—Industry by Industry

The FEA plan for the industrial disarmament of Germany, which is given in detail in the following pages, was developed from the recommendations made to the Foreign Economic Administration by the technical industrial disarmament committees appointed to study each of the major German industries considered significant for war.

The initial selection of such German industries was incorporated in the FEA interim report of January 10, 1945; separate projects in the TIDC series were undertaken for the following industry groups:

Project 1. Implements of war.
Project 2. Aircraft industry.
Project 3. Scientific research.

Project 4. Secret weapons.
Project 5. Light metals.
Project 6. Petroleum.
Project 7. Rubber and rubber products.
Project 8. Electronics.
Project 9. Antifriction bearings.
Project 10. "Common components" (exclusive of bearings).
Project 11. Machine tools.
Project 12. Automotive industry.
Project 13. Shipbuilding and shipping.
Project 14. Machinery.
Project 15a. Iron and steel.
Project 15b. Ferro-alloys.
Project 16. Chemical industries.
Project 17. Solid fuels.
Project 18. Electric power.
Project 19. Nonferrous metals and strategic minerals.

After the Yalta agreement calling for the "elimination or control of all German industries that could be used for military production," arrangements were made for careful reexamination of the entire industrial field to include any industry groups important for war, which were omitted from the original FEA interim report. Upon the advice of the Ad Hoc Committee of the War and Navy Departments, established to handle projects 1, 2, and 4 of the TIDC series, additional study projects for the following industries were established:

Project 30. Forest resources and forest products.
Project 31. Optical instruments.
Project 32. Transportation and communications.

Other industries, such as food processing, textile manufacturing, leather goods, and many similar ones, were excluded. It was recognized that they contribute in an over-all sense to Germany's ability to wage war, but it was felt that their essentiality to the civilian economy and their ramified character made it desirable to classify them as peaceful industries whose production or capacity should not be eliminated or controlled unless subsequent technological change makes them peculiarly vital for war. While admittedly this distinction between industries in the war industries category and the so-called peaceful industries is a somewhat arbitrary one, and perhaps subject to modification after an examination on the ground of the character and contour of German military industries, it has been adopted for working purposes in the preparation of this program.

Although the recommendations made by TID committees have in general been carried over into the present plan, some changes have been required. Summaries of the TIDC recommendations and an explanation and analysis of the changes that have been made appear in appendixes to this report. (See appendixes D and H.)

The proposed programs for the treatment of German industry are directed solely at removing the war potential inherent in the industrial operations of the industries concerned. It is impossible, however, by industrial disarmament methods alone fully to remove the ability of the industries to contribute to German aggression. Other types of disarmament measures which are recommended in other sections of this report will strengthen the industrial disarmament recommendations given here.

The Military Disarmament Program prohibits underground plants, pilot plants and testing facilities, and certain types of productive

equipment chiefly useful for war purposes. It is to be understood that these recommendations apply also to the industries which are to be eliminated according to programs proposed below.

The restrictions on scientific and engineering research recommended by the Scientific Disarmament Program should likewise be construed to cover these industries.

Recommendations for the treatment of German cartels, combines, and trusts, provided under the Institutional Disarmament Program, are essential to the removal of the war potential of German industry. Concentration of power in a few hands has been a notable characteristic of German heavy industry, and, if continued, would be a powerful aid to forces attempting to restore German economic aggression and militarism.

In the licensing of new construction, for instance in the chemical industry, consideration should be given primarily to economic rather than strategic factors in choosing the location. New construction, if permitted, should be undertaken in locations where raw materials, fuel or power, and manpower are easily available.

In drawing up the various programs it has been possible to set definite levels for permitted production or capacity in some categories such as iron and steel, automotive vehicles, and fixed nitrogen. In other cases, a tentative level is set to serve as a guide until a survey can be made on the spot to determine the capacity appropriate to a peacetime economy. For still other industries, no helpful estimate can be made until such a survey is completed and no recommended capacity figure is stated in the plan.

Removal of capital equipment should proceed while these surveys are being made, inasmuch as present capacity in these industries far exceeds peacetime needs and the rate of removal cannot be unduly rapid under the confused conditions of transport, labor, etc., now prevailing in Germany.

The industries are treated below in alphabetical order. A list of them with the pertinent Technical Industrial Disarmament Committee report on which the FEA program is largely based follows:

	Project No.
Automotive industry	12
Bearings industry	9
Chemicals industry	16
Common components, *see also* Bearings	10
Electronics industry	8
Forest resources and forest products industry	30
Iron and steel industry	15
Light metals industry (aluminum and magnesium)	5
Machinery industry (except machine tools)	14
Machine tools industry	11
Nonferrous metals and strategic minerals	19
Optical instruments industry	31
Petroleum industry	6
Power industry	18
Rubber and rubber products industry	7
Shipping and shipbuilding industry	13
Solid fuels industry	17
Transportation industry	32

1. THE AUTOMOTIVE INDUSTRY

(See summary of TIDC project No. 12 in appendix D)

(a) Significance of the automotive industry

The war potential of a motor-vehicle industry lies in its availability as a major machine aggregation which can be converted to mass production of an extremely wide variety of military products. Its role as a producer of combat and military transport vehicles ranks second in significance. Although the German automotive industry is in no way comparable to that of the United States (269,000 passenger cars were manufactured in Germany in 1937 as compared to 3,915,000 in the United States, and 62,100 trucks and busses in Germany as compared to 893,100 in the United States), its capacity has been greatly expanded during the war as indicated by the rise in capitalization of the manufacturing firms. In addition to all types of military transport vehicles, the automotive industry is able to supply tanks, aircraft engines, motorcycles, and automotive accessories.

The automotive industry, as here defined, covers the manufacture and assembly of all functional and nonfunctional parts and components, the manufacturing facilities for which primarily serve the civilian motorcycle, car, truck, or bus markets.

(b) Program for the automotive industry during the occupation

Prohibitions on production of heavy trucks and military vehicles are considered in the section on military disarmament (sec. I). It is here recommended that—

(1) Plant capacity be allowed sufficient for annual production of 90,000 units of passenger vehicles and light trucks, no individual unit to weigh more than 2,500 pounds, and for maintenance and repair facilities.

(2) Production be permitted up to allowed capacity.

(3) Distribution of the permitted product in the civilian economy need not be controlled for disarmament reasons.

(4) Imports should be allowed of vehicles necessary to the German civilian economy that cannot be manufactured under the terms of the first recommendation.

(5) Export of finished vehicles and parts be prohibited.

(c) Justification for the proposed treatment of the automotive industry

The proposed program for the automotive industry permits manufacture in Germany of passenger vehicles and light trucks to supply the civilian economy at a level deemed safe and desirable, while making the capacity limit of the industry sufficiently low to insure its inadequacy for war purposes. Provision of bearings and possibly other common components only under an import licensing system is a safeguard against production of vehicles in excess of the proposed production limits. (See subsecs. 1 and 4 of this chapter D.) Because the limits set for total production are believed to meet the requirements of Allied security, it is considered unnecessary to supervise or control distribution of vehicles manufactured in Germany.

2. THE BEARINGS INDUSTRY

(See summary of TIDC project No. 9 in appendix D)

(a) Significance of the bearings industry

In most modern industrial products, bearings are an essential component wherever moving parts are required to operate at high speeds under stress. Because antifriction bearings are required in industries covering the whole range of industrial and military potential, the industry has a strategic importance out of proportion to its relatively small size.

None of the major belligerents escaped wartime difficulties with antifriction bearing supplies, but Germany was relatively the best prepared as a result of consolidation and rationalization of her bearings industry in 1929 and intensive development during the rearmament program. Germany was by far the largest European producer of antifriction bearings, possessing about 50 percent of all continental capacity west of Russia. Production of antifriction bearings in Germany increased by over 70 percent from 1935 to 1938, from 2.5 million units per month in 1935 to 4.4 million units per month in 1938. During the war output rose continuously to a peak in 1943, when the monthly average was 7.5 million units.

The bearings industry is a small though highly concentrated and specialized segment of the metalworking economy manufacturing an essential common component. Its basic products are three types of antifriction bearings—ball, roller, and needle roller—produced in thousands of different sizes and modifications.

(b) Program for the bearings industry during the occupation

It is recommended that—

(1) Production of antifriction bearings be prohibited.

(2) Capacity for such production be eliminated.

(3) Requirements for antifriction bearings be supplied by licensed imports, which are to be permitted only for incorporation in end products whose production in Germany is allowed and only to the extent to which such production is allowed.

(c) Justification for the proposed treatment of the bearings industry

The complete elimination of the bearings industry in Germany and supply of her entire bearings requirements by imports will provide a useful device for enforcing controls over a wide range of civilian and war industries requiring these vital components. By limiting imports to the quantities required for approved production, an effective sanction on unapproved production of many items is provided so long as the prohibition on German bearings production is maintained. Since antifriction bearings are today a necessary component of many military items and of the machinery for producing such items, control of the use of these components can prevent the production of such items and can furnish a barometer on the operation of much of the remainder of industry.

3. THE CHEMICAL INDUSTRIES

(See summary of TIDC project No. 16 in appendix D)

(a) Significance of the chemical industries

The chemical industries occupied a key position in the development of Germany's war potential. Chemicals were essential to the manu-

facture of such direct military supplies as explosives, incendiaries, and gases. They also provided the substitutes such as synthetic oil and rubber and artificial fibers for war materials that were lacking in Germany. Research and experimentation have long been fostered by the German chemical industries, and they have made technological contributions of the utmost importance to Germany's peacetime as well as her wartime economy. The chemical industries, led by I. G. Farbenindustrie, the dominant German chemicals combine, also were among the foremost sectors of the German economy in waging economic warfare through cartel agreements and other means long before hostilities started. All of these factors have contributed to place the chemical industries, together with the heavy machinery industries, next to iron and steel in their importance to the German potential for war.

Although capacity and production figures in the various branches of the industry were among Germany's most closely guarded military secrets, it is known that chemicals production was tremendously expanded as a part of Germany's preparation for war. Some idea of the extent of the expansion necessary to meet wartime needs is indicated by the situation in the United States, where the dollar volume of production of chemicals and allied products expanded from 3.7 billions in 1939 to 8.3 billions in 1944. The following table gives for certain chemical industries the estimated 1944 capacity in the Altreich and the 1944–45 output in Greater Germany (calculated upon the basis of maximum monthly output). The data on output are included only because statistics on Altreich production are not available. Since they are for Greater Germany and thus include some production outside of the Altreich and since they are based upon maximum monthly output, they should be regarded as no more than generally indicative of production possibilities in Germany.

Commodity	Altreich estimated capacity, 1944 (in thousand metric tons)	Annual rate of production during maximum month [1]	Maximum month
Chemical nitrogen (nitrogen content)	[2] 1,600	1,053.2	April 1944.
High-pressure synthesis	[2] 1,237	(4)	
Calcium cyanamide	[3] 210	(4)	
Byproduct	153	(4)	
Methanol	(5)	303.6	January 1944. [6] [7]
Concentrated nitric acid (HNO_3) [8]	(4)	970.8	March 1944. [4]
Calcium carbide	1,725	1,704.0	July 1945.
Chlorine	516	534.0	May 1944.
Soda ash, calcined	1,466	1,584.0	July 1945.
Sodium hydroxide (caustic soda)	784	730.8	May 1944.
Sulfuric acid, anhydrous (H_2SO_4)	2,600	2,172.0	December 1944.
Benzol	704	(4)	
Tar	2,380	(4)	

[1] Maximum monthly output multiplied by 12.
[2] Total.
[3] Excluding convertible capacity in synthetic oil industry but including high-pressure capacity being used for methanol.
[4] Not available.
[5] This probably represents a maximum. Cyanamide capacity may run as low as 180,000.
[6] Practically all of output believed to have come from the Altreich.
[7] Less than 1 percent of this amount represents methyl alcohol made by wood distillation.
[8] Exact strength not stated in sources.

(b) *Program for control of the chemical industries during occupation*

General program

Because of the complexity of the chemical industries and the paucity of information on German capacity and production, the program for elimination of plant usually has had to be stated in general terms. Final determinations will have to be made after a very comprehensive survey has been completed and possibly after the results of that survey have been considered in the light of the conditions then existing in the German economy. However, removals for reparation can be started immediately, the estimated probable levels as stated in the program for individual basic chemicals serving as a guide until an adequate field survey can be made.

It should be noted that this chemical program excludes a treatment of the synthetic-rubber and synthetic-oil industries, which because of their especial importance are treated separately in this chapter. Also, it should be noted that, in addition to these industrial disarmament measures, the military disarmament section (sec. I) includes some provisions regarding certain chemical products regarded as within the definition "arms, ammunition, or implements of war."

It is recommended that—

(1) Limitations be placed upon the production, importation, and/or distribution of the following basic chemicals:

Fixed nitrogen.
Nitric acid.
Calcium carbide.
Chlorine, caustic soda, and soda ash.
Sulfuric acid.
Primary tar distillates.

In addition, all high-pressure equipment devoted to the manufacture of synthetic methanol should be removed or destroyed and the production of methanol by synthesis prohibited.

(2) The level of production permitted for each of the basic chemicals listed above be determined by the requirements of a minimum civilian economy. All plants above the capacity needed to produce for vital German requirements and to allow for a small operating reserve (which should not exceed 15 to 20 percent of the total annual production) should be removed or destroyed.

(3) With exceptions noted in the specific program, no production be allowed for exports of these basic chemicals or of goods requiring large quantities of these chemicals in their manufacture.

(4) After the elimination of excess capacity a survey be made of all large consumers of these basic chemicals in order to determine what proportion of their capacity has been made surplus because of the limitations upon production and importation of these basic chemicals or their derivatives. Any surplus capacity of consuming industries should then be requisitioned as reparation or destroyed.

(5) No new construction of chemical plants, including chemical research institutions and pilot plants, be permitted unless licensed by the interallied control authorities.

(6) Control by allocation of raw materials, as indicated in the specific program, be maintained. Allocations of materials should be made by a German agency subject to approval by an interallied production control board which should make certain that they are correlated with over-all controls of power, fuel, and other products.

(7) The distribution of output of these basic chemicals and certain products indicated in the specific programs also be controlled but by the Germans themselves through a distributions control agency, whose operations shall be subject to review and change by the interallied production control board. Allocation directives and the quantities allotted to all major consumers should be published.

(8) The interallied production control board receive from each plant producing any of the basic chemicals a monthly statement enumerating (*a*) receipts of raw materials, (*b*) stocks, (*c*) amount of fuel and power consumed, (*d*) production, and (*e*) sales. The reports on materials, coal, and power should be checked against over-all allocation figures. Members of the board, or designated technicians, should have access at all times to the records and premises of chemical plants, research laboratories, and pilot plants.

(9) Limitations be placed upon the size of an enterprise manufacturing any chemicals, and no concern be permitted to hold more than a given number of productive units in the segment of the chemical industry over which control is to be exercised. (See recommendations of the Institutional Disarmament Program regarding treatment of cartels, combines, and trusts.)

(10) Germany be permitted to import basic chemicals as provided in the specific programs. Imports should be controlled by interallied licensing and the quantities limited to the amounts needed to meet essential civilian needs.

Specific program for individual chemicals

Nitrogen fixation.—It is recommended that—

(1) (*a*) All cyanamide plants be eliminated.

(*b*) Synthetic ammonia plants in excess of production limit be eliminated.

(*c*) High-pressure equipment devoted to the manufacture of synthetic methanol be removed or destroyed.

(*d*) Plant capacity in excess of 50,000 tons of nitrogen per annum be removed from any one plant.

(*e*) Byproduct ammonia plants be allowed only at approved coal distillation plants.

(2) (*a*) Aggregate of fixed nitrogen capacity in Germany not exceed 250,000 metric tons of nitrogen content.

(*b*) Byproduct ammonia be allowed.

(*c*) Synthetic ammonia be allowed only in form of ammoniated gypsum (fertilizer containing ammonia in form of ammonium sulfate) or urea and to be put in such form at the plant synthesizing ammonia.

(3) (*a*) Production be permitted within capacity limitations unless restriction is needed to prevent stock piling beyond seasonal agricultural needs.

(*b*) Production of synthetic methanol be prohibited. There is no restriction upon production by wood distillation.

(4) Coal and electric power be allocated in order to enforce the production limit.

(5) All of the product be distributed for fertilizer uses.

(6) (*a*) Imports of nitrogen compounds be allowed for essential fertilizer requirements that cannot be met by permitted capacity and for authorized minimum industrial uses, such as for nitric acid and industrial explosives.

(*b*) Imports of methanol for essential civilian uses that cannot be supplied by wood distillation be permitted.

(7) Exports of fixed nitrogen or of commodities requiring a large quantity in their manufacture be prohibited.

Nitric acid.—It is recommended that—

(1) Plant and equipment be eliminated from all but a few locations where production can be easily controlled.

(2) The aggregate capacity of the few plants allowed to remain be commensurate with the production limit.

(3) Production be limited to minimum requirements for minimum essential industrial uses, such as metallurgy and manufacture of dyes, plastics, and other chemical products.

(4) Imports of raw materials be limited to minimum requirements.

(5) Distribution of product be supervised in order to insure legitimate peacetime use.

(6) Imports be limited to requirements of product allowable beyond permitted production.

(7) Exports of this commodity or of goods requiring a large quantity in their manufacture be prohibited.

Calcium carbide.—It is recommended that—

(1) All plant or equipment in excess of allowable capacity be eliminated.

(2) Capacity and production be limited to the minimum amount necessary for the production of industrial acetylene gas to meet essential requirements in excess of these supplied by acetylene from other sources. This aggregate probably should not exceed 200,000 metric tons of calcium carbide per year.

(3) Allocation of power be limited to requirements for permitted production.

(4) Calcium carbide be used only for producing industrial acetylene gas. The use of the product for manufacture of acetylene as a basic raw material for large-volume organic synthesis should be prohibited.

(5) Imports be prohibited.

(6) Exports of this commodity or of goods requiring a large quantity in their manufacture be prohibited.

Chlorine, caustic soda, and soda ash.—It is recommended that—

(1) Excess capacity for manufacture of chlorine be eliminated.

(2) Capacity be limited to that commensurate with approved production limit, probably not in excess of 75,000 metric tons of chlorine per year.

(3) Production be limited to that needed to meet minimum requirements for essential uses, such as chlorination of water and manufacture of pulp, paper, textiles, dyes, etc. No limit should be placed on production of caustic soda or soda ash.

(4) Control on production be maintained through power allocation.

(5) Distribution of chlorine and caustic soda be supervised in order to insure their use for essential purposes. Control of soda ash is necessary only to determine the quantities utilized for causticization with lime to produce caustic soda.

(6) Imports of these commodities be prohibited.

(7) Exports of these commodities or of goods requiring a large quantity in their manufacture be prohibited.

Sulfuric acid.—It is recommended that—

(1) (*a*) Essential chamber process plants be permitted to remain.

(*b*) Contact plants be eliminated except for those necessary to meet approved aggregate capacity for manufacture of sulfuric acid.

(2) Total capacity be commensurate with approved production limit, probably not in excess of 1,000,000 metric tons of sulfuric acid (anhydrous H_2SO_4) per annum.

(3) Production be limited at least for a trial period to that required for approved uses.

(4) Distribution of both domestic and imported pyrites and sulfur be controlled in order to enforce production limits on manufacture of sulfuric acid.

(5) Distribution of sulfuric acid be supervised for a trial period in order to insure its being delivered for approved uses only.

(6) Imports be prohibited.

(7) Exports of this commodity or of goods requiring a large quantity for their manufacture be prohibited.

Primary tar distillates.[1]—It is recommended that—

(1) (*a*) Distillation of primary tar distillates be allowed only in a limited number of licensed plants.

(*b*) Other plants be eliminated.

(2) Total capacity in licensed plants not exceed that commensurate with permitted production.

(3) Production in licensed plants be limited to quantity of distillates necessary to meet legitimate minimum civilian requirements, requirements to be determined after survey of industries consuming distillates for nonmilitary purposes.

(4) Primary tar distillates be allocated to licensed plants in quantities sufficient for permitted production. (Coal will be allocated to coal distillation plants—coke ovens and gas works—but such allocations will be made for purposes other than controlling production of primary tar distillates. Limitation of coke or gas production will, however, limit the output of primary tar distillates.)

(5) Plants be inspected and pitch analyzed to insure compliance with control directives.

(6) Distribution of distillates be supervised in order to prevent use for illicit purposes.

(7) Imports of primary tar distillates be prohibited.

(8) Residual pitch from licensed distilleries and from coke oven and gas works be exported or consumed to prevent stock piling.

[1] The term "primary tar distillates" as here used includes the oils derived from coal distillation (e. g., benzol, toluol, naphthalene, phenol, cresol, anthracene, etc.), whether recovered from coke oven and gas works gases or by the distillation of coal tar.

(9) Any amount of primary tar distillates produced at coke ovens and gas works in excess of quantity needed to supply licensed distilleries be exported or burned.

(c) *Justification of program*

General program

The chemical industries present a special problem in the program for industrial disarmament in that, while many chemical products are essential to the prosecution of war, these same products are of vital importance in the maintenance of a modern civilian economy. Furthermore, the raw materials used in their manufacture—coal, limestone, salt, sulfur, nitrogen, wood, etc.—either could not be controlled or would necessitate controls reaching into every corner of the industrial life of Germany. To control each individual chemical or end product that is utilized to some degree for military purposes would also require great numbers of technical personnel and constant surveillance of many industries.

The program presented for control of the German chemical industries provides for reduction in capacity and production, for allocation of raw materials wherever feasible, and for supervision over the use of certain chemical products, limited as to number but, because they are basic, affecting the production of nearly all chemical commodities. It is believed that such a program, cutting through the structure of the chemical industries, will reduce German chemicals production to a level safe both qualitatively and quantitatively.

Reductions in capacity in the basic industries designated in the specific program and in the industries which are heavy consumers of these basic chemicals should take care of the overexpansion which has permitted tremendous wartime production yet at the same time leave sufficient capacity to maintain a civilian economy. Limitations upon the size of plant and the number of units permitted an individual concern should deter the redevelopment of vast chemical complexes. The licensing of new construction will be a safeguard both against undue expansion in any chemicals field and against the re-formation of chemicals combines.

The allocation of raw materials by a German agency under supervision of an interallied production control board will permit a careful watch upon production and at the same time afford the opportunity to adjust chemicals production in the light of over-all conditions within the German economy. The Germans are also to be forced to control the distribution of output. This is considered feasible and advisable for several reasons:

(1) Centralized distribution control as proposed for certain basic chemicals and other raw materials is necessary because only by the maximum use of productive facilities during a major proportion of the time can the total productive plant permitted to Germany be kept at a minimum.

(2) Personnel requirements for a complete interallied control system would be excessive.

(3) It would be difficult for industries to fake statistical records of consumption and distribution without upsetting balances which could be readily checked by an interallied board.

(4) Placing responsibility upon the German administering authorities for the equitable distribution of limited essential commodities may force the German people themselves to keep a check upon their actions.

Although the breaking up of combines, cartels, and trusts in general falls under the Institutional Disarmament Program, a specific recommendation on this subject is made a part of the FEA plan for the chemical industry because of the unusual degree of combination and cartelization found in this field. Continued existence of I. G. Farben and other combines with their widespread holdings, organizations, and offensive production and trade policies could thoroughly frustrate any attempt to control the German chemical industry. These organizations could skillfully fake records, evade production or distribution limitations, and effectively emasculate any control program which might be attempted. Their breaking up is as essential to control of the German chemical industry as is the removal of plants.

Specific programs

Nitrogen fixation.—Probably no sector of the chemical industries has received more consideration in disarmament planning than that which produces nitrogen-bearing compounds. The importance in warfare of such compounds has been tremendous since the invention of gunpowder, and even developments such as the atomic bomb will not make them entirely obsolete. At the same time, nitrogen compounds have become increasingly important in agriculture and are necessary in order that crop yields may keep pace with increases in population and depletion of the soil.

The TID Committee report, the report of the Engineers Joint Council,[2] and numerous other reports have stressed the importance of forcing Germany to depend on outside sources for a substantial portion of her fixed nitrogen requirements. Usually such studies have recommended elimination of high-pressure synthesis, leaving Germany her cyanamide plants and her facilities for recovery of byproduct ammonia from coal distillation. The FEA plan, however, would permit Germany to retain facilities having practically the same capacity for nitrogen fixation as that recommended by other studies, but proposes that sufficient high-pressure synthesis plant be allowed to replace cyanamide plants which would be eliminated.

Production of ammonia by high-pressure synthesis rather than by the cyanamide process is recommended for the following reasons:

(1) Elimination of cyanamide production would permit greater reduction in calcium carbide capacity, and calcium carbide is a dangerous war material in itself. Calcium cyanamide plants were used by Germany in the interwar period to maintain the demand for and output of calcium carbide, in order that the capacity would be available for military purposes when needed.

(2) Violations of the limitations of fixed nitrogen output could be more readily detected in high-pressure synthesis than in cyanamide plants.

(3) German cyanamide plants are uneconomical of operation and obsolete in equipment. The Germans would, therefore, be left with their more efficient and modern plants for limited nitrogen fixation.

[2] Report of the Fixed Nitrogen Task Committee of the National Engineers Committee of the Engineers Joint Council, New York, June 5, 1945.

The total production allowed by the FEA plan would not be sufficient to meet Germany's minimum civilian requirements for fertilizer and essential industrial uses. The plan agrees with other studies in recommending that production be held to such a level—forcing Germany to import to meet her vital requirements—in order to prevent the stock-piling of nitrogenous materials or their diversion to illicit uses.

Production of byproduct ammonia produced at coke and gas ovens will be limited by the restrictions placed upon iron production. It will probably not exceed 40,000 metric tons of nitrogen content per year. The 210,000 metric tons of cyanamide capacity in which production was allowed by other studies would be replaced in the FEA program by high-pressure synthetic production, making up a total permitted annual production of 250,000 metric tons of nitrogen.

The prohibition of synthetic methanol production is proposed in connection with control of nitrogen fixation because high-pressure equipment used for methanol synthesis is readily convertible to the production of synthetic ammonia, and vice versa. Furthermore, methanol is used in the production of formaldehyde, from which is produced hexamine, an ingredient of certain high explosives.

Nitric acid.—Although the production of nitric acid would be limited by the allocation of ammonia and nitrates, it is singled out for special control because it is the most important derivative of fixed nitrogen that is used by the explosives industries. Supervision of distribution and of imports is essential to prevent illicit use of this product.

Calcium carbide.—Calcium carbide is one of the most versatile organic compounds and its manufacture from coke has been one of the principal means by which Germany's coal resources have been utilized to circumvent wartime blockades. Acetylene made from calcium carbide is a basic raw material used in the manufacture of buna rubber, some plastics, probably some synthetic fibers, and also some explosives. Its use in organic synthesis has led to the development of a tremendous autarchic industrial complex. The use of acetylene in organic synthesis should, therefore, be prohibited and production limited to acetylene gas, for which Germany probably required not more than 200,000 metric tons of calcium carbide annually in prewar years.

Chlorine, caustic soda, and soda ash.—The control of chlorine production is considered essential because of chlorine's many wartime uses but particularly because of its potential use in the manufacture of explosives. Capacity should be reduced and production limited to a level necessary to supply minimum requirements for essential uses as named above. Nearly all chlorine is produced as the byproduct of the electrolytic manufacture of caustic soda, magnesium metal, and metallic sodium. Magnesium and sodium are critical war metals and probably can be largely eliminated from the requirements of postwar Germany. Caustic soda, however, is essential to a civilian economy. No quantitative limitations upon the production of caustic soda and soda ash are proposed. However, distribution of caustic soda should be controlled to check upon the production of chlorine and to ensure its use for essential purposes. Control of soda-ash distribution is proposed only because it will be necessary in order to determine the output of caustic soda by the causticization of soda ash and thus to serve also as an indirect check upon chlorine production.

Sulfuric acid.—Although Germany consumed more than 1,000,000 metric tons of sulfuric acid (anhydrous H_2SO_4) per annum before the war, this is the level recommended for capacity until it is determined to what extent sulfuric acid is being recovered in connection with metallurgical processes.

Retention of chamber process plants in preference to contact plants is recommended because the chamber process does not make the strong concentrations of acid required for the manufacture of explosives, and acid produced by the chamber process must be further processed if a stronger acid is required.

Primary tar distillates.—Tar distillates are the raw materials for a large part of Germany's explosives industry, as well as for her dyes, plastics, and pharmaceuticals industries. A survey of consuming industries will be necessary in order to determine legitimate uses and the level of production required to fill essential civilian requirements. Production in a limited number of licensed plants, constant inspection of the plants, and analysis of the pitch are proposed as safeguards against illicit use of these versatile chemical materials. Exportation or other disposal of the pitch from licensed distillation plants, as well as coke ovens and gas works, is necessary to prevent stock piling of primary tar distillates.

4. THE COMMON COMPONENTS INDUSTRY [3]

(See summary of the TIDC project No. 10 in appendix D)

(a) Significance of common components

Many common components like antifriction bearings occupy key positions in the structure of a modern industrial economy. Most common components can be manufactured in well-equipped machine shops and plants, which are most frequently operated by subcontractors. Completion of the end products in which they are incorporated is necessarily delayed if the components do not arrive as scheduled. One of the most critical tasks in war production in the United States was the securing of a large uninterrupted and properly distributed flow of such intermediary products to their many and varied end uses. In Germany, on the other hand, the scheduling problem was solved with a substantial degree of success—thanks to the factory organization whereby many small and well-dispersed plants produced components later assembled in a few large plants—until communications were heavily bombed during 1944. Germany's large machine-manufacturing capacity, plus its flexibility of operation, have given her a high war potential in such items.

The term "common component" designates any finished part, subassembly, or item of *accessory* equipment which is incorporated intact in the end products and/or in the productive facilities of two or more industries. The products classifiable as common components are numerous and include bearings, carburetors, catalytic equipment, rubber products (belting, tubing, etc.), tools and dies, ignition apparatus, and metal products (castings, forgings, extrusions, stampings, wire, etc.). Small compressors, pumps, transformers, and rectifiers are classifiable as common components only insofar as they are used as *accessory* equipment.

[3] See section on bearings.

(*b*) *Program for the common components industry during the occupation*

It is recommended that—

(1) (*a*) The structure of German industry be investigated while the programs for the bearings and machine tool industries are being executed, in order to determine whether further controls are needed on production, distribution, or imports of other common components. The productive capacity for some components may not be reduced to essential needs by the execution of the machine tool program alone, and further removal of components-producing plants may be required in order that readily convertible surplus capacities are not allowed to remain. Furthermore, consideration should be given to forcing German dependence on import sources for a particularly vital key component, in addition to bearings, as a measure of disarmament.

(*b*) The survey should consider the long-term requirements of the reduced industrial economy and should compare them with a census of specialized equipment available for the production of the following items which are not covered in other sections of this program:

Asbestos products.
Batteries.
Bellows.
Bushings.
Cordage.
Electric motors and generators.*
Fittings and unions.
Flexible joints and couplings.
Gaskets.
Heat exchangers.*
Internal combustion engine electrical components.
Materials handling equipment.
Mechanical power transmissions.
Permanent magnets.
Porcelain products.
Pressure vessels.*
Speed changers and gears.*
Springs.
Transformers and rectifiers.

2. Imports of any common component which may be later made the subject of a production prohibition be controlled by import licensing and imports of other common components be kept under general surveillance.

3. Exports of common components either be strictly curtailed or prohibited.

(*c*) *Justification for the proposed treatment of the common components industry*

The production of common components is widely ramified and few statistical data on capacities, production, or requirements are ordinarily available. In wartime they have been compiled only when shortages caused a production bottleneck. However, the far-reaching application of many components may provide the basis for a valuable control of the industrial economy which would aid in preventing the development of war potential.

The most important common component of machines, including those used in military equipment, is the antifriction bearing. As outlined in the program on the bearings industry, production of this component should be eliminated and its import should be carefully controlled through licensing in order to insure that only bearings required for approved purposes can be made available. It is possible that the recommended survey will disclose other common components, control of which will provide additional sanctions for enforcement of other production controls such as those recommended on automobiles,

* Those components which might receive highest priority for analyses are starred.

trucks, machine tools, and chemicals, or for the enforcement of controls not yet recommended but which may, at a later time, become desirable.

5. THE ELECTRONIC-EQUIPMENT INDUSTRY

(See summary of TIDC project No. 8 in appendix D)

(*a*) *Significance of electronic-equipment industry*

Electronics emerged in World War II as one of the leading factors in successful modern warfare. Radio and radar provided the telecommunications, detecting, ranging, and remote control which enabled intelligent and coordinated direction of wieldy dispersed air, ground, and naval forces.

Of the 50 companies engaged in the manufacture of electronic equipment in Germany, 5 dominate the field. Germany's greatest contribution was the program of standardization undertaken during the thirties and the rigid specifications set for components. Electronic equipment was not, however, an important export item, partly because military secrecy and the necessity to stock-pile equipment overrode the commercial advantages to be gained from dominating the European market.

As here considered the electronics industry covers domestic radio equipment and electronic equipment for uses other than domestic radio. The latter category covers equipment for (*a*) telecommunications, (*b*) use of pulse circuits, (*c*) specialized military use, (*d*) underwater sound (sonar), (*e*) facsimile and picture transmission, (*f*) marine radio, (*g*) amateur transmission, and (*h*) testing the above.

(*b*) *Program for the electronics industry during the occupation*

For purposes of control recommendations, domestic radio and the electronics industry other than domestic radio are considered separately.

Domestic radio.—It is recommended that—

(1) Production and assembly facilities be permitted in the domestic radio field for tubes, transformers, condensers, resistors, potentiometers, and end equipment.

(2) Such facilities be restricted to one city or district and be controlled by a system of inspection and supervision in order to limit production to actual peacetime use.

(3) No specific allocation of raw materials nor any control over distribution of product be required.

(4) Imports of domestic radio equipment be limited to whatever legitimate need for such equipment exists beyond the permitted manufacturing ability.

(5) Exports of radio equipment or parts be prohibited.

The electronics industry other than domestic radio.—It is recommended that—

(1) No facilities be allowed for such production.

(2) No production of equipment in this category be permitted.

(3) Essential peacetime needs for facsimile and picture transmission and marine radio equipment be met by controlled imports.

(4) No exports in this field be allowed.

(c) Justification for the proposed treatment of the electronics industry

Perpetual restrictive regulation of the production of electronic equipment is essential to prevent maintenance or redevelopment of a war potential. Control would be necessary even if electronic applications during World War II had aided only telecommunications, but with electronic equipment making it possible to launch and guide devastating attacks on distant targets through remote control, curtailment of the industry is imperative.

The proposed controls over domestic radio are believed sufficiently liberal to permit adequate communications and civilian broadcast reception necessary for education and entertainment purposes. Limitation of the industry to a small area is intended to facilitate supervision to insure that no products in the dangerous categories are manufactured. Drastic controls over the electronics industry other than domestic radio are required to eliminate German access to products vital to warfare, and its complete elimination is therefore proposed.

6. THE FOREST RESOURCES AND FOREST PRODUCTS INDUSTRIES

(See summary of TIDC project No. 30 in appendix D)

(a) Significance of the forest resources and forest products industries

In her drive for self-sufficiency, Germany elevated her forest resources to a place of importance second only to her coal deposits. Her forest resources have been conserved to the maximum, even to the extent of forcing imports of wood and pulp at times when foreign exchange was at a great premium, rather than cutting into her stock pile of standing timber. It was cut into only when the war had proceeded so far that imported products were difficult to obtain while requirements were great.

Wood as a structural material is essential in war for such military installations as barracks, warehouses, and hangars, and for such industrial installations as mines, railroads, and docks. Wood products are equally essential for packing materials, paper, and paperboard, and are of increasing significance in the manufacture of synthetic substitutes for other materials used in war production. Modified wood products can be used in place of steel, light metals, and copper in parts of aircraft, ships, firearms, and many components, while chemical wood products provide cellulose for rayon and explosives, various alcohols, acids, and oleoresins.

The importance of the forest industries of Germany can be inferred from the fact that the Germans today are, on the average, the best dressed of any people in Europe, largely because their production of synthetic fibers, derived principally from wood, adequately replaced their dwindling stocks of natural fibers. During the war Germany had almost no imports of natural vegetable fibers and had only a small production of wool. Existing stocks were rapidly reduced even though supplemented by confiscation of clothing and fiber stocks in occupied countries. In spite of the diversion of much processing capacity to production of wool cellulose for explosives, the synthetic-fiber industry was able to supply civilian and military needs for cloth and requirements of industrial fibers, such as rayon tire cord.

The forest resources and forest products industries cover the following categories:

Wood as a structural material.—Standing timber, logs, bolts, round and hewn timber, pulpwood, lumber, veneer, plywood, millwork, and allied products.

Modified woods.—Compressed and/or impregnated wood, stabilized wood, reconstituted wood.

Chemical products from wood.—Wood pulp and its derivatives and byproducts; products of the hydrolysis, distillation, gasification, extraction, fusion, and hydrogenation of wood. This category includes such varied materials as paper, rayon, nitrocellulose, plastics, lignin, yeast, acetic acid, acetone, methanol, wood sugars, and their fermentation products, gas for internal-combustion engines, synthetic gasoline, creosote, pitch, tar, turpentine, rosin, charcoal, and many other products.

(*b*) *Program for the forest resources industry during the occupation*

For purposes of control recommendations, forest resources and forest products are considered separately.

Forest resources.—It is recommended that—

(1) Production of logs, timbers, pulpwood, and fiber wood be accelerated, if possible, to an annual rate of about 75,000,000 cubic meters for a period of years sufficient to reduce Germany's reserves to a reasonable level. As far as is practicable the cutting should follow established German forestry practices, except for the rate of cutting.

(2) Allocation to uses be given in the following order:

(*a*) Mine timbers.
(*b*) Lumber for housing.
(*c*) Lumber for other reconstruction.

Uses for pulp to be secondary to above.

(3) Imports in this category be prohibited except as provided under forest products.

(4) No restriction be placed on exports.

Forest products.—It is recommended that—

(1) Capacity for production of chemical and ground wood pulp be limited to requirements of the German civilian economy, or to the capacity required to process indigenous German pulpwood production, whichever is smaller, plus a small operating reserve and sufficient additional capacity to process allowed imports.

(2) Production not exceed civilian requirements.

(3) In the distribution of pulp, priority be given to manufacture of paper; manufacture of synthetic fibers to be secondary.

(4) Imports of special wood fiber or pulp be permitted for manufacturing requirements of high-grade special papers. Imports of ground wood pulp required for low-grade paper should be allowed.

(5) Exports be permitted of high-grade special papers but not of synthetic fiber except as it may be incorporated in high-grade textiles or clothing.

(*c*) *Justification for proposed treatment of the forest resources industry*

Accelerated felling of German forest resources with emphasis on cutting of larger diameter trees is intended to reduce the average growing stock volume per acre (including saw timber and cordwood)

from the estimated prewar level of about 1,600 to 2,000 cubic feet per acre, to a recommended 1,000 to 1,200 cubic feet per acre in 12 to 15 years. It is believed that production of logs, etc., at an annual rate of around 75,000,000 cubic meters is entirely feasible as regards equipment and manpower. However, transportation facilities from forest areas may become the limiting factor on this production goal and may cause the growing stock volume to be reduced somewhat more slowly than contemplated here.

Germany's forest resources, if systematically exploited, should enable her to supply essential domestic requirements and in addition provide substantial amounts for reparation. Reparation in lumber will greatly assist in the reconstruction of Europe.

Germany's capacity for producing mechanical pulp exceeds the capacity of her forests to produce pulpwood, even under the systematic overexploitation of her forests which is recommended. The removal as reparation of this excess capacity will assist recipient countries to exploit their own forest resources.

Limitations on the over-all production of pulp and the priority recommended for the manufacture of paper aid in the assurance that the manufacture of synthetic fibers will be secondary. In this way, production of synthetic fibers will be virtually limited to domestic needs and exports will be restricted to very high-grade textiles or clothing specialties made of synthetic fiber, necessitating the import of natural fibers for average or low-grade textiles or clothing.

No restriction is expressly placed on the type of wood pulp to be manufactured by the Germans. Only chemical pulp is satisfactory for synthetic fiber or explosives production. The proportion of chemical pulp required in the paper industry varies with the grade of paper produced but will probably amount to less than half of the total.

In the course of reducing the over-all pulp-making capacity, a reasonable ratio can be attained between chemical and mechanical pulp capacities, thus giving assurance that no undue proportion of the product can be diverted to manufacture of synthetic fibers or explosives.

7. IRON AND STEEL INDUSTRY

(See summary of TIDC project No. 15 in appendix D)

(a) *Significance of the iron and steel industry*

The size of the iron and steel industry of any country is generally a good measure of its ability to fight a prolonged war. Not only does the industry supply the tremendous quantities of the basic materials used in ships, transports, arms, armaments, ammunition, tanks, and other implements of war, but it also provides the materials necessary to expand the industrial capacity to produce and service them.

High steel production in Germany since 1920 has been the result of continuously abnormal conditions. Changes in Germany's steel production between the two wars were not influenced primarily by changes in business conditions, as occurred in other countries. They were the result of abnormal factors such as the rebuilding of a large part of the industrial plant after World War I, the payment of reparation in kind, subsidization of exports and their artificial maintenance and increase during depression years, the use of cartels, and the launching of the war program after 1933.

The iron and steel industry of Germany has been expanded under far-reaching, long-term plans for war. During the first decade after World War I, Germany rebuilt most of the capacity lost as a result of the Treaty of Versailles. Most of the railroads and rolling stock were replaced, the marshaling yards were rebuilt and enlarged, large new power plants were built, the lost merchant marine was replaced, and old and new industries were rebuilt and greatly expanded.

Direct Government participation in the German iron and steel industry aided its expansion. In addition, German-dominated cartel arrangements and Government subsidies aided the expansion of the industry. The German steel syndicate allocated export markets to low-cost producers who were better able to compete with the industries in other countries, while at the same time the domestic markets were allocated to higher-cost producers, so that many kinds of steel in Germany sold for as much as twice the price in other countries where industry was not subsidized.

Even during the depression years, 1931–35, Germany maintained her steel production by huge volumes of exports. For example, in 1931 the exports of finished steel and steel products were 48 percent of the total weight of finished steel produced. Export subsidies, low labor costs, and skillful management were combined to permit Germany to export large volumes of iron and steel products, especially machinery. In addition to maintaining her own steel production, these exports were another weapon of economic aggression which served to curtail the importing countries' domestic steel market, thus further depressing their steel industries. The German-dominated steel cartels also discouraged a balanced steel industry in those countries by increasing their proportion of lower-grade steel in the cartel-prescribed production program. Hence the industries of these countries were supplying more structural steel to a declining construction industry market and less of the high-grade steels used by the machinery and armament industries.

After 1933, when rearmament began, steel was needed not only for the new army that created great demands for armament but for the construction of huge plants for synthetic oils, fibers, rubber, and other industries, together with a hugh construction program for the Reichsautobahn and the Westwall. So great had the direct and indirect demand for steel become that despite an increase of 330 percent in finished steel production between 1933 and 1938, steel had to be rationed.

Although only 20 to 25 percent of the iron ore and an even smaller proportion of the alloy ores consumed by Germany came from domestic sources, Germany has been rated for many years as the world's second largest producer of pig iron and steel. Only the United States has exceeded her output in this vital industry. In recent times, Germany has also been one of the greatest exporters of semi-finished and finished iron and steel products, becoming the primary world exporter of such items in the years immediately prior to the advent of national socialism. The rising needs for iron and steel in the Nazi war program, however, pushed German iron and steel exports below those of Belgium just before the war.

German iron and steel production in the area now called the Altreich has experienced a considerable growth.

The trends of the development are illustrated in the following table which shows some highs and lows of production.

Production

[1,000 metric tons]

	Pig iron	Crude steel	Rolled steel
1913	10,900	11,500	9,500
1929	13,239	16,023	11,300
1932	3,932	5,562	4,247
1938	18,100	22,000	16,000
1943	16,000	21,500	15,000

The iron and steel industry encompasses several related types of operations, each of which yields products which are in a marketable state but which for the greater part become the raw materials of the next step in the industry. The first is the blast-furnace operation, which produces pig iron. This pig iron may be melted for cast iron or it may be used as a raw material for producing steel. Steel is produced in furnaces of several kinds, but most is produced either by the open-hearth, by the Bessemer, or by the Thomas process. Pig iron and scrap are the chief raw materials. Electric furnaces are usually used for producing ferro-alloys and alloy steels from pig iron, scrap, and various other minerals or metals. The ingots which are the product of steel operation may then be forged, rolled, or cast into shapes which are more or less standardized and have many uses and markets. Blast furnaces, steel furnaces, rolling mills, and usually coke ovens, which furnish the supplies of coke, are all considered to be part of the iron and steel industry.

(*b*) *Program for the iron and steel industry during the occupation*

It is recommended that—

(1) Domestic production of steel ingots and castings be limited to 5,000,000 metric tons per annum, including both carbon and alloy steel. The 5,000,000 metric tons of ingots and castings will yield about 3,665,000 metric tons of finished products at the average German rate of 73.3 percent of ingot tonnage.

(2) Production permitted in any one year be reduced by the amount of any imports.

(3) Stocks of steel at the end of any year in excess of minimum working stocks be charged against the production quota of the following year.

(4) The allowed total of 5,000,000 tons per annum of crude steel include not more than 600,000 tons of alloy steel, of which not more than 30,000 tons shall be high-alloy steel. This limitation represents maximum permitted consumption and should be reduced by the amount of imports in any one year.

(5) Capacity for steel ingots and castings be reduced by removal from its estimated level in excess of 20,000,000 tons to a level adequate to produce the permitted production of 5,000,000 per annum.

NOTE.—This might require the maintenance of plants with a rated capacity somewhat in excess, taking into account operating reserves, etc. The rated capacity of plants not removed should not in any event be in excess of 6,000,000 tons. A careful engineering survey should fix the exact amount of rated capacity below the 6,000,000-ton level which is to be retained.

(6) Blast-furnace capacity be limited to the amount of pig iron or hot metal required for the production of 5,000,000 metric tons

per annum of ingots and steel castings and for the operation of the permitted iron-foundry capacity (maximum of 900,000 tons per annum).

(7) The annual output of pig iron (and imports, if any) be adjusted to the quantity of scrap available for use during that period. Any iron produced from ore in other than blast furnace equipment—e. g., sponge iron or luppe produced by the Krupp-Renn process—should be considered a part of the permitted production quota of pig iron, and such equipment should be allowed for in fixing the permissible blast furnace capacity.

(8) The total capacity of primary and finishing steel mills be limited to 4,600,000 metric tons per annum, sufficient to afford an operating reserve in meeting requirements for various types of the steel products whose actual output is limited to 3,665,000 tons per annum.

(9) (*a*) Production be controlled by the allocation of the four principal classes of necessary raw materials—iron ore, scrap, coke, and ferro-alloys.

(*b*) The amount of iron ore permissible be adjusted to the amount of scrap consumed.

(*c*) Ore quantities be calculated in terms of iron content.

(*d*) Stock piles of ore be limited to the amount necessary to maintain production at the determined level.

(*e*) Similarly, iron and steel scrap in excess of that needed for current production plus working stocks be impounded or made available for reparation.

(*f*) Coke, ferro-alloys, and alloy scrap be allocated to the industry on the basis of permitted production of iron and steel.

(10) (*a*) Imports of iron ore be licensed and restricted to the amount required, together with domestic ore and available scrap, for the permitted production of iron and steel.

(*b*) Imports of iron and steel products be limited to a small fraction of the permitted German capacity in iron and steel.

(11) Exports of ingot and finished steel, including ferro-alloys, be prohibited. The controls on the production of pig iron do not allow for any export of this commodity.

Prohibitions on certain types of equipment are included in the military disarmament section.

(*c*) *Justification for proposed treatment of the iron and steel industry*

The controls proposed for the German iron and steel industry constitute the heart of the entire disarmament plan through their far-reaching and inescapable effects on the whole industrial economy of Germany and of all of Europe. By the drastic limitation of her iron and steel industry, Germany will be denied the basic materials for rebuilding her war machine. She will lose the excessive capacity through which she dominated the heavy industry of most of Europe. Moreover, through the operation of the proposed program for the iron and steel industry, controls are facilitated over a wide range of other industries which are encompassed in the over-all disarmament plan. Directly or indirectly, every industry using iron and steel for plant equipment or as raw material is affected by the controls proposed for the iron and steel industry.

The contributions of the iron and steel industry to the expansion of German heavy industry and to the forging of her war machine have already been pointed out. Prevention of the resurgence of industrial and military might is the basic goal of this disarmament plan; lacking excess capacity for iron and steel over her minimum peacetime needs, Germany can be restricted to a peaceful way of life. If allowed her tremendous capacity of the presurrender period, she will continue as an armed threat to the world.

By scaling down the German iron and steel industry as here proposed, a better balance is assured in the industrial economy of all the rest of Europe. Countries which depended on Germany for major supplies of machinery, machine tools, and other products which depend on the iron and steel industry will be enabled to create and support their own heavy industries. They will be able to operate their own steel facilities nearer to capacity and can add to these facilities with German equipment obtained as reparation. Their economic independence of Germany will help to assure their political independence.

In the over-all plan as here developed, certain major industries dependent on iron and steel are specifically limited as to their postwar size. (See programs on machinery, machine tools, shipping, and transportation.) Obviously the decreased availability of iron and steel will act as a direct check on these industries and control over them will be greatly facilitated; German industry will be restrained to production of these goods for permitted domestic uses and to such exports as are allowed. No longer will Germany be able to use these industries to reinforce her war machine or to frustrate the legitimate development of industry in other countries of Europe. In contrast, if steel were as plentiful in Germany as in former years, it would be extremely difficult to curb its diversion to these undesirable end uses.

Many other industries are dependent on iron and steel to a major degree only when the producing plants themselves are built and equipped. Vast quantities of iron and steel went into German plants producing synthetic oil, synthetic rubber, bearings, aluminum, and magnesium. Destruction or removal of all these plants is recommended in the present plan. No possibility exists that they can be rebuilt without iron or steel, or that they can be reconstructed from any minor surpluses of steel developing under the proposed program of control over the iron and steel industry.

Within the whole realm of modern technology no readily available low-cost material is known whose physical and chemical properties permit its substitution in the large-scale uses of iron and steel. Wood, the light metals, and plastics all can fulfill some functions of iron and steel, but their uses are definitely limited both qualitatively and quantitatively. Just as the widespread usefulness of iron and steel in the arts of war justifies the proposals to limit their production in Germany, so does their indispensability in the arts of peace justify the carefully thought-out proposals here presented for the amounts to be permitted to the peacetime economy.

The iron and steel capacity recommended is based on estimates of the maximum postwar needs for iron and steel in a peaceful, self-sufficient Germany, including steel for new peacetime and "peaceful" industries such as light consumers' durable goods of countless varieties.

While allowing no margin for manufacture of war materials, these requirements should allow for legitimate domestic consumption and export of products using iron and steel sufficient to permit the iron and steel industry to play a reasonable although indirect part in providing foreign exchange for the imports of goods required to maintain a tolerable standard of living. Three different methods have been used in estimating German steel requirements in the postwar period. The results are summarized here, and the data and reasoning are set forth in appendix I.

(1) If it is assumed that the standard of living can be measured by steel, Germany is not entitled to a per capita steel consumption greater than that of the average of the other European countries (exclusive of United Kingdom and the Union of Soviet Socialist Republics), according to the Berlin Protocol. Production of crude steel for Germany with its present population, therefore, should not exceed 5.1 million metric tons per annum (based on a 10-year average—1928–37).

(2) Between 1933 and 1938 pig-iron production increased 3¼ times while ingot steel output tripled. In comparison the manufacture of consumer goods increased by about 45 percent. Even this relatively low figure should not be applied to steel requirements without adjustment, since the production of consumer goods containing iron and steel did not increase at the same rate as did the over-all volume of consumer commodities. The increase in pig-iron and crude-steel production can be explained only in terms of expanded capital construction and armament production. From 1933 to 1938 capital construction increased 2¼ times.

On the basis of Germany's capital replacements in 1932, about 5,000,000 metric tons of ingot a year would be sufficient for postwar replacements and, in addition, would provide sufficient steel to maintain the country's consumer-goods production at a level corresponding to the average in the 1928–34 period.

A substantial amount of capital additions and expansions that under American practice would be considered capital charges are shown by the Germans as replacements. Therefore, the allowance of steel for replacements is sufficient to provide for new and expanding industries. Furthermore, this amount of steel would be sufficient to permit more than the entire export volume of iron and steel machinery and iron and steel wares of 1932. Such an ingot production would permit a substantial reserve which may be used for new peacetime industries, since many of Germany's industrial needs will be less than they were in 1928–32 because of industrial disarmament. Lastly, it is probable that it will take Germany some time to reconstruct her consumer-goods-production facilities to permit manufacturing at 1928–34 levels.

(3) A detailed calculation of German steel requirements for postwar Germany indicates a need for production of about 5,000,000 ingot tons annually. This estimate is based on a study of actual needs for each broad category of end products made from steel.

The requirements of steel for railroads are estimated at 700,000 metric tons, as determined by the amount of steel needed for the maintenance of rails and rolling stock. Steel requirements for the maintenance of inland shipping are based on a present and future necessary fleet equivalent to 1,000,000 gross tons of standard steel vessels and amount to 16,000 metric tons.

The 773,000 metric tons estimated steel requirements for the postwar German construction industry are based on annual peacetime consumption needs. Most of this steel can be used for bridges, roads, industrial facilities, and highways; relatively little steel is used in residential construction.

The postwar annual requirements of finished steel products for postwar German production of machinery, equipment, and boilers are estimated at 600,000 metric tons. This volume of finished steel, with an equal weight of cast iron, will allow a production of 1,200,000 tons of machinery, of which 25 percent can be exported and still leave sufficient machinery for domestic consumption.

It is estimated that 200,000 tons of finished steel will be necessary for operations to keep mining, especially coal production, at a high level in postwar Germany. Annual German requirements of steel for the production of iron and steel wares have been estimated at 1,300,000 metric tons, of which approximately 1,140,000 tons are for domestic needs and the remainder for exports.

The production in all stages of the iron and steel industry is kept in balance with the proposed steel figure through limiting capacity of blast furnaces, steel furnaces, and primary and finishing mills; by licensing imports of iron ore; by adjusting output of pig iron according to the availability of scrap; and by limiting exports and imports of steel. All these recommendations are required in order to assure the efficacy of the steel limitation.

The controls proposed for the iron and steel industry cover not only the total quantity of steel to be permitted but also the types of steel to be produced. By strictly curtailing production and imports of alloy steel, the manufacture of armaments, machine tools, and other prohibited or limited items is effectively restricted.

8. THE LIGHT METALS INDUSTRY

(See summary of TIDC project No. 5 in appendix D)

(a) Significance of the light metals industry

Aluminum and magnesium are at present the major components of aircraft. Aluminum has also been extensively used in Germany as a substitute for copper in the electric transmission and power-generating fields. Between 60 and 70 percent of Germany's wartime consumption of aluminum was for direct military uses. A much higher proportion of magnesium went into military uses, notably in aircraft construction and in incendiaries.

Germany's light metals industry is primarily a war industry. Her aluminum capacity was increased from 40,000 tons per annum in 1932 to 209,000 tons in 1939 as a result of government financing and planning by the German General Staff which correctly predicted the role of aircraft in the war to be initiated. The aluminum industry in Germany, moreover, is an autarchic industry, inasmuch as Germany has virtually no domestic sources of bauxite and has to depend upon thermal rather than hydroelectric energy. The basic raw materials for magnesium manufacture are widely prevalent in Germany, but production of magnesium ingot also makes large demands upon electric energy.

The light metals industry is here considered as covering the following subdivisions:

Raw materials.—Bauxite, alumina, magnesium chloride, and accessory raw materials required in production of aluminum and magnesium.

Basic metallic forms.—Ingot, pig, billets and slabs derived from primary or secondary aluminum or magnesium or their alloys.

Scrap.—Any scrap metallic product containing 50 percent or more of aluminum or magnesium and in addition, wrecked aircraft scrap.

Semifabricated forms of aluminum or magnesium or their alloys.—Castings, forgings, powder, rolled and extruded products, including structural shapes.

(*b*) *Program for the light-metals industry during the occupation*

The program for the industry is divided into several constituent parts covering metal production, fabrication, and raw and intermediate materials.

Aluminum and magnesium metal.—It is recommended that—

(1) Production of aluminum and magnesium metal be prohibited in Germany.

(2) All plant capacity for such production be eliminated.

(3) No electric power be allocated to plants producing either aluminum or magnesium.

(4) Because aluminum has some essential civilian uses, aluminum metal be made available in controlled quantities. The probable annual aggregate to be allowed is 30,000 tons, to be supplied from scrap and from stocks of virgin metal plus imports up to 18,000 metric tons per annum, if and when needed. Fabrication of magnesium scrap is to be discouraged.

(5) Imports of magnesium be prohibited.

(6) All light metal scrap found in Germany be subject to allocation. Such scrap should be converted into ingot as soon as practicable.

(7) Distribution of light metals be controlled until stock piles are disposed of to the extent necessary to assure that military uses are prevented. (Also see section on military disarmament.)

(8) Stocks of light metals held by individual consuming firms be limited to a 90-day supply, and total inventories in Germany not exceed 65 percent of allowable annual consumption. Any inventories in excess of this amount which are not required for reparation should be impounded by Allied authorities for later release to fabricators at the permitted rate.

(9) Because production is prohibited, no export limitation on aluminum and magnesium metal is necessary.

The controls over domestic cartels, trusts, and combines in the Institutional Disarmament Program will serve to make available to the world the basic magnesium patents that have long been a monopoly of the I. G. Farbenindustrie A. G.

Semifabricated forms.—It is recommended that—

(1) Fabricating facilities for light metals be limited to the capacity necessary to fabricate the permitted quantities of metals. The probable aggregate capacity required is estimated at 40,000 to 50,000 tons.

(2) Excess fabricating facilities be removed.

(3) Production of peacetime civilian goods be allowed to the extent made possible by permitted light metals supplies.

Certain heavy fabricating equipment will be prohibited by the military disarmament recommendations.

Alumina.—It is recommended that—

(1) Production of alumina be prohibited in Germany.

(2) Plant capacity be eliminated by removal or destruction.

(3) Imports of the material be permitted for minimum civilian needs other than production of aluminum and abrasives.

Bauxite.—It is recommended that—

(1) No controls be placed upon production of bauxite from the insignificant deposits available in Germany.

(2) Imports be permitted only for the manufacture of refractories and necessary chemicals.

(c) *Justification for proposed treatment of the light metals industry*

The controls recommended in the foregoing paragraphs are based on the obvious fact that German light metals production has been undertaken almost wholly to meet wartime needs. In addition, the Germans have long used their magnesium industry as an aggressive instrument of economic warfare through control of the basic patents.

By prohibiting production of the light metals in Germany, by providing for allocation of scrap, and by limiting aluminum inventories and the capacity and type of fabricating facilities, German utilization of the light metals can be restricted to essential peacetime civilian needs. The required fabricating capacity is estimated at 40,000–50,000 tons annually, on the basis of light metals consumption in Germany prior to the artificial expansion of the industry immediately after Hitler seized power. This capacity level should be checked by survey, however. Limitation of the fabricating capacity, which takes longer to rebuild than aluminum ingot capacity, gives assurance that the Germans will not be able to fabricate excessive amounts of the light metals should these become available through break-down of controls.

Strict control of the light metals industry is a vital corollary to controls proposed for other metals such as copper and iron and steel, which may replace or be replaced by aluminum and magnesium.

Because Germany has few bauxite deposits, the mining of bauxite should not jeopardize Allied security. Strict control over imports of bauxite serves to prohibit its use for aluminum production. The denial of electric power to the aluminum industry will aid in preventing reduction of magnesium chloride to magnesium and of alumina to aluminum metal, whether the alumina is obtained from bauxite or other aluminum-bearing materials, such as clay. This measure, however, should be considered as a supplementary control since reduction processes that do not rely heavily upon electricity may be developed.

Production of magnesium chloride, the intermediary product in the production of magnesium, cannot be prevented in Germany inasmuch as it occurs as a byproduct of other operations, as "potash waste liquor," for example, in the extraction of potassium chloride for carnallite. For this reason, the production of magnesium cannot be prevented other than by complete elimination of the industry.

Aluminum scrap can be used for all products except high strength alloys. The probable existence of very large stocks of scrap in Germany

makes essential the control of its availability and distribution in order to assure prevention of military uses.

9. THE MACHINERY INDUSTRY

(See summary of TIDC project No. 14 in appendix D)

(a) Significance of the machinery industry

By continuing to manufacture peacetime machinery while rearming, Germany kept in production machine-making capacity which was later converted to war production and which in the meantime made possible the increase of machinery exports. These exports helped to provide badly needed foreign exchange or were bartered for raw materials either lacking or in short supply in Germany.

During the war components were manufactured in small widely dispersed plants and then assembled in a few large plants (increasingly located underground during the latter years of the war), and the German machine industry was able to obtain—probably late in 1943—a higher level of production than at any previous time (more than 4,000,000 tons). This level of production is believed to have been generally maintained until at least the autumn of 1944, despite the bombing of manufacturing facilities and communications. Only when the 1939 borders were breached and productive facilities were captured was the German machinery industry no longer capable of fulfilling its task.

The following categories are here considered as covering major phases of the machine industry: Industrial machinery for general or special purposes; machinery for construction, mining, metal-working, and marine propulsion; railroad locomotives; prime movers, pumps, and compressors; agricultural machinery; refrigeration and air-conditioning machinery; machinery for the production or processing of consumers' goods (food, textiles, paper, shoes, etc.); office or business machinery.

(b) Program for the machinery industry during the occupation

The size of the postwar German machinery industry will be determined by the limitations placed on machine tools and iron and steel. (See also the programs for these industries.) It is believed that the execution of these two programs will limit productive capacity for machinery to about 1,200,000 tons of machines per annum.

In addition to the prohibition imposed by the Military Disarmament Program on certain types of machinery used in the manufacture of arms, ammunition, and implements of war, it is recommended that—

(1) Surplus machinery plants be eliminated.

(2) Enterprises producing iron and steel be prohibited from manufacturing machinery, and enterprises manufacturing machinery be prohibited from producing iron and steel. This recommendation will be reenforced by the Institutional Disarmament Program which proposes the breaking up of German cartels, combines, and trusts.

(3) Imports of machinery be prohibited, with possible exceptions for such essential civilian equipment as cannot be manufactured in Germany.

(4) Surveillance of exports be maintained in order to prevent unduly large exports to any one country which might result in

domination of the market by Germany or in excessive dependence on German machinery products.

(5) No controls over product distribution are contemplated.

(c) Justification for proposed treatment of the machinery industry

Germany achieved superiority in armament between 1935 and 1939 by concentrating a considerable part of the nation's productive facilities on the manufacture of machines and weapons of war and other machinery essential to a war economy. The capacity of the machine industry was sufficiently large simultaneously to equip Germany with an overwhelming weight of arms of all types, to continue the manufacture of machinery for peacetime uses, and to maintain and even to increase machinery exports. For permanent reduction of German war-making potential, it is necessary to limit the capacity of the machinery industry.

The elimination of machinery plants rendered surplus by limitations on production of iron and steel and the substantial reduction of machine tool stocks will trim down that portion of the capacity of the German machine industry which constitutes war potential. In addition, the proposed licensing of new machine tools provides a sanction against unauthorized expansion of capacity and manufacture of excessive quantities of machinery products. The prohibitions against manufacture of both machinery and iron and steel by the same enterprises will be a safeguard against diversion of iron and steel, needed for other purposes, to machinery manufacture. Such diversion would be very difficult to detect if iron and steel and machinery were produced in adjacent plants under the same ownership.

The general prohibition against imports of machinery will force maximum use of available capacity, leaving no excess capacity for the initiation of a rearmament program except at the cost of inordinate sacrifices on the part of the civilian population.

Assuming that the Germans choose wisely in determining the types of machinery they produce, their remaining machinery industry should be adequate to maintain the German peacetime economy, and to devote about 25 percent of capacity to exports. A proposed postwar production program on which iron and steel requirements of the machinery industry have been based (see the section on the iron and steel industry) provides sufficient capacity to produce machinery for peacetime uses but proposes reduction of capacity for the production of heavy machinery required in a program of rearmament.

10. THE MACHINE-TOOLS INDUSTRY

(See summary of TIDC project No. 11 in appendix D)

(a) Significance of the machine-tools industry

The possession by any nation of a large installed stock of machine tools constitutes of itself a major element in offensive and defensive war-making capacity, and, since machine tools reproduce themselves in geometric progression, a large machine-tool inventory is an even greater factor in war-making potential.

Recent studies and comparisons show that Germany has a stock of machine tools altogether disproportionate to any normal needs of a civilian economy. With a population of 70,000,000, Germany had a machine-tool production in 1939 exceeding that of the United States,

with more than 130,000,000 people and a more highly mechanized civilian economy.

This disproportion in Germany's holdings of machine tools is even more striking in relation to other European countries. Germany was the main source of supply of the nonindustrialized areas of central and southern Europe. The concentration of machine-tool and machinery production in Germany weakened the defense potential of the rest of Europe.

It is believed that even with allowance made for damage and obsolescence, Germany had at the end of hostilities in excess of 4,000,000 tons of machine tools, together with a vast undamaged capacity for new production. These may be easily converted to peacetime production, with the result that Germany would again dominate the markets of Europe. They may later and with the same ease be reconverted to war production.

(*b*) *Program for the machine-tools industry during the occupation*

The machine-tools industry as here considered includes the large variety of products ordinarily classified as machine tools and, in addition, metal cutting and precision measuring tools and gages, and abrasives.

Machine tools.—It is recommended that—

(1) Germany be permitted installed machine tools not to exceed an aggregate weight of 500,000 tons or an aggregate quantity of 240,000 machine tools. (Prohibitions on certain kinds and sizes of equipment are discussed in the military disarmament section.)

(2) Plant capacity for the production of machine tools be limited to 25,000 metric tons per annum or an aggregate quantity of 12,000 machine tools by removal from Germany of the 50 or 60 largest firms normally producing 60 percent of the German machine-tool output.

(3) Surveillance be maintained over the supply of raw materials to the machine-tools industry in order to detect and prevent violations of the above recommendations.

(4) In order to provide a high use of factor and to facilitate surveillance, the production, ownership, and transfer of machine tools be licensed. In licensing machine tools the licensing authority should control the distribution of machine tools in order to prevent the reorganization of large machine-manufacturing enterprises, and the use of mass production methods except for consumers' goods.

(5) Both imports and exports of machine tools be prohibited.

Metal cutting tools and precision measuring tools and gages.—It is recommended that—

(1) The 15 largest metal cutting tool manufacturing plants and the 17 largest plants manufacturing precision measuring tools and gages be eliminated.

(2) No restrictions on the remaining plants in these categories be required.

(3) Both imports and exports of products in these fields be prohibited.

Abrasives.—It is recommended that—

(1) Production of abrasives in Germany be completely prohibited.

(2) Imports of abrasive products be permitted in quantities sufficient to meet authorized uses.

(c) Justification for proposed treatment of the machine tools industry

The recommended inventory of 500,000 metric tons of machine tools, which has been selected as representing Germany's requirements in peacetime, is based on her total net addition of 491,000 tons of machine tools in the decade 1925–34. Since the most important part of the output of all the machine industries is ordinarily produced by machine tools under 10 years old, this net addition is a significant index of Germany's needs in peacetime. Even though the recommended level of 500,000 tons is a drastic decrease from the present estimated level of 4,000,000 tons, it should be borne in mind that Germany's rearmament program, undertaken in 1934 and 1935, was initiated with effective holdings of around 500,000 tons. The limitation of machine tool production to 25,000 metric tons a year will just provide for replacements on a 20-year life basis of the total German holdings of 500,000 tons and should prevent the geometrical increase in German machine tool holdings which occurred in Germany after 1935.

The licensing of machine tools is indispensable to the effectiveness of the programs for this industry and for the machine industry. Limitations on total inventory and total annual production of machine tools will not in themselves foster the use of machine tools for production of consumer goods machinery or prevent their use for the production of heavy machinery required in a rearmament program. By licensing machine tools to enterprises, control can be maintained over the uses to which they are put.

Continued exportation of machine tools from Germany would prolong the dependence of the importing countries upon Germany and might tend to retard the development of adequate machine tool industries in the countries which receive German machine tools as reparation. Furthermore, the existence in Germany of machine tool capacity sufficient to provide exports would constitute surplus capacity over Germany's needs. Such surplus capacity represents a great danger to United Nations security, since it can always be turned to the manufacture of machines for war purposes. Imports of machine tools, on the other hand, would increase Germany's inventory and thus thwart the first recommendation.

Machine tools cannot be operated without metal cutting tools. Despite the removal as reparation of a large proportion of Germany's present machine tool inventory, the recipient countries would still be dependent upon Germany if a high percentage of the metal cutting tool industry of Europe remained concentrated within Germany's borders. Removal of the capital equipment of 15 of the largest German producers of metal cutting tools would put the capacity of this industry in balance with the recommended capacity of the machine tool industry, and strengthen the new machine tool industries of the recipient countries.

Gages and precision measuring tools are absolutely essential to the mass production of interchangeable parts. In addition, machine tools are practically valueless without some ready means to ascertain that their products meet dimensional specifications. The reason for the proposed removal of the 17 largest manufacturers is the same as in the case of metal cutting tools.

The prohibition on production of abrasives is based on the fact that they are essential in the manufacture of machine and equipment

parts made to the very strict dimensional specifications required for many industrial and military uses. Mass production of aircraft and military weapons cannot exist without abrasives. Forcing the German machine tool industry to rely on imported abrasives will provide the occupation authorities with a ready means of checking upon German compliance with the machine tool program. Elimination of the abrasives industry will not greatly increase unemployment or demands for foreign exchange.

11. THE NONFERROUS METALS AND STRATEGIC MINERALS INDUSTRY

(See summary of TIDC project No. 19 in appendix D)

(a) Significance of nonferrous metals and strategic minerals

Aside from the metals such as iron and steel, aluminum, and copper which are used in large quantities in a modern peacetime or wartime economy, there exists a considerable group of other metals and minerals which are of vital importance. Germany is self-sufficient in very few of these commodities and must therefore stock pile imported supplies in advance of war and attempt to develop substitutes. Uses of these strategic metals and minerals cover a wide range of industries and applications; e. g., atomic energy (uranium), ferro-alloys (chromium, manganese, nickel, tungsten, molybdenum, and vanadium), brass, bronze, and other nonferrous alloys (copper, lead, zinc, tin); control instruments (mercury), aluminum production (cryolite, fluor spar); explosives (antimony, mercury); poison gas (arsenic).

(b) Program for the strategic minerals industry during the occupation

It is recommended that—

(1) Imports of uranium and other radioactive elements and their ores and compounds be completely prohibited.

(2) Imports of chromium, manganese, nickel, tungsten, molybdenum, vanadium, and their ores and compounds be licensed and limited to prevent excessive growth of inventories.

(3) Imports of the following additional metals and minerals be kept under surveillance:

METALS

Copper.	Mercury.
Lead.	Cadmium.
Zinc.	Tantalum.
Tin.	Platinum.
Antimony.	Nonferrous scrap.
Bismuth.	

NONMETALLIC MINERALS

Asbestos (spinning)	Lithium compounds
Barite (chemical)	Monazite
Beryl	Muscovite mica
Corundum	Phlogopite mica (spark-plug type)
Cryolite	Quartz crystals (piezoelectric)
Diamonds (industrial)	Rutile
Fluorspar	Steatite talc
Graphite (large flake)	Celestite
Ilmenite	Natural nitrates[1]
Arsenic	
Kyanite	

(c) *Justification for the proposed treatment of the strategic minerals industry*

The reasons behind the ban on imports of uranium and other radioactive minerals and their ores and compounds are self-evident. Germany is not believed to have any deposits of uranium within her borders. However, much basic work on atomic energy has been done in Germany and it is known that development of an atomic bomb was attempted during the war. There doubtless still exists in Germany a body of trained scientists in whose hands uranium and similar elements would be a real danger to the world.

The six nonferrous metals whose import is to be limited should be considered as accessories to the war potential of the iron and steel industry. These minerals would be subjected to primary control in the limitation of steel and alloy-steel manufacturing, but should also be subjected to import licensing into Germany as a supplementary control, in order to prevent hidden accumulations for future war purposes.

Among the metals and minerals listed under recommendation 3 above, several are of considerable value in a war economy, though none of them alone could be of decisive importance. It is therefore not believed necessary to impose specific limitations on imports of these materials. Equally effective disarmament control can be imposed by other measures which are more readily enforceable.

12. THE OPTICAL INSTRUMENTS INDUSTRY

(See summary of TIDC project No. 31, appendix D)

(a) *Introduction*

Germany has long been the world's outstanding producer of optical glass and the instruments into which it has been incorporated. She has been able to supply not only her domestic requirements for war and peace but also exports to practically every country in the world. German optical instruments are highly regarded for quality and performance and their prestige has had an important propaganda value for Germany.

Glass is an essential basic material for the electronic devices necessary for radio, radar, and many other applications. The optical instruments industry includes production of optical and ophthalmic glass, optical elements, ophthalmic lenses, and military and civilian optical instruments. Optical glass is necessary for armored windows in aircraft or automotive equipment; for mirrors, prisms, lenses, etc.; for various optical devices necessary in war, such as range finders, telescopes, binoculars, filters, and gun and director sights. Optical instruments also have a definite use in industry for precision measuring devices and in the laboratories for study of strain patterns and photographic analysis.

(b) *Program for the optical instruments industry during the occupation*

For purposes of control recommendations, the industry is considered under two headings:

Optical and ophthalmic glass, optical plastic elements, and ophthalmic lenses.—For this sector of the industry it is recommended that—

(1) Production be limited to that sufficient to supply peacetime civilian requirements.

(2) Surveillance of imports of raw materials and products be maintained.

(3) Exports be prohibited.

Technical and scientific optical instruments.—It is recommended that—

(1) All capacity in this category be removed except that for manufacture of civilian cameras.

(2) Production of all technical and scientific optical instruments other than civilian cameras be prohibited.

(3) No limit be placed on production of civilian cameras.

(4) Imports of civilian type technical and scientific optical instruments be allowed.

(5) Exports of civilian cameras be permitted.

(c) *Justification for proposed treatment of the optical instruments industry*

The elimination of production of technical and scientific optical instruments is considered advisable because of its highly critical contribution to the German war potential and because it can be effectively controlled only by complete elimination. Manufacture of civilian cameras is not believed to constitute an armament potential, and it will provide exports for exchange for necessary imports. Because of requirements in the civilian economy for optical and ophthalmic glass, it is believed desirable to permit sufficient production of these materials to fill Germany's peacetime needs. Prohibition of the manufacture of technical and scientific optical instruments limits utilization of this glass to production of cameras, eyeglasses, and other nonstrategic products.

13. THE PETROLEUM INDUSTRY

(See summary of TIDC project No. 6 in appendix D)

(a) *Significance of the petroleum industry*

Being poorly endowed by nature with petroleum deposits, and foreseeing early that the coming war would be a war of movement which would require large amounts of oil and petroleum to run aircraft, tanks, and combat vehicles, Germany attempted to free herself of dependence on imported supplies by developing synthetic oil production, beginning in 1927. Production was constantly stepped up, rising from 300,000 metric tons in 1935 to an annual rate of about 5,000,000 tons early in 1944. The price of relative self-sufficiency is enormous, both from the point of view of raw materials and expenditure of labor. It is estimated that approximately 5 tons of coal are necessary for the production of 1 ton of synthetic oil and that 5 to 10 times more working hours are required for the production of liquid fuels from coal than are necessary for the production of the same amount from petroleum.

Germany began the war in September 1939 with stocks estimated at not more than 2 to 3 million metric tons and production at an annual rate of roughly 3.4 million tons, of which about one-third was derived from German and Austrian crudes and about two-thirds from synthetic plants. Predamage capacity of the synthetic oil plants in German Europe is estimated at about 6,000,000 metric tons annually.

In addition crude-oil production in the Altreich in 1944 is estimated at 711,000 metric tons. The annual preraid capacity of German crude oil refineries has been estimated at about 3.1 million tons.

The oil and petroleum industry is here limited to—

(1) Production, processing, and refining of natural petroleum and shale oil and of synthetic oil produced from coal, tars, and other sources.

(2) Production, processing, and refining of benzol, alcohol, and allied products for fuel use.

(3) Production, processing, and refining of solid and gaseous materials as substitutes for the customary uses of liquid fuels.

(b) *Program for the petroleum industry during the occupation*

It is recommended that—

(1) All facilities for synthetic petroleum production be eliminated.

(2) Distribution of coal and coal tar be supervised in order to prevent their use for synthetic petroleum production.

(3) German requirements for petroleum products be met insofar as possible from indigenous crudes produced at their maximum efficient rate, which is probably around 750,000 tons per annum.

(4) Refining facilities be limited to those necessary to process indigenous supplies of crude oil plus a modest operating reserve and plus requirements for producing minimum supplies of petroleum specialties not readily importable.

(5) No allocation of raw materials nor control over product distribution be required.

(6) Imports of required petroleum products be permitted, but imports kept sufficiently low to prevent stock-piling for war purposes. In addition, small imports of crude or intermediates may be allowed, but these should not aggregate a substantial percentage of the entire petroleum requirements.

(7) No controls over exports be required.

(c) *Justification for the proposed treatment of the petroleum industry*

The program of eliminating synthetic petroleum production facilities and of exploiting the limited supplies of natural crudes is a double check on the resurgence of excessive capacity in the German liquid-fuels industry. The reconstruction of a synthetic-oil industry, if disarmament control should ever break down, would take considerable time and require scarce raw materials and high technical skill, thus prolonging the period necessary for German rearmament. During the intervening period, German indigenous crudes will be further depleted since imports of petroleum crudes and products will be greatly restricted. There will also no longer be available in Germany excess capacity for processing imported crudes or synthetic products, should the Germans attempt to gain access to foreign crudes.

14. THE POWER INDUSTRY

(See summary of TIDC project No. 18 in appendix D)

(a) *Significance of the power industry*

Most of the major industries essential for a war economy require large amounts of electric power. This is particularly true in the important electrochemical and electrometallurgical industries. It

15. THE RUBBER AND RUBBER PRODUCTS INDUSTRY

(See summary of TIDC project No. 7 in appendix D)

(a) *Significance of the rubber and rubber products industry*

Lacking domestic supplies of natural rubber, Germany turned the attention of her scientists to the development of synthetic rubber as long ago as World War I. It was not until 1936, however, that acceptable synthetic rubber was made on a commercial scale. Production has risen rapidly from about 1,000 tons in 1936 to an estimated 140,000 tons in 1944. While synthetic rubber cannot entirely replace natural rubber for all uses, its production enormously extends the war potential of a nation lacking natural rubber and subject to blockade.

The rubber industry is a necessity to a nation in the prosecution of a modern war. The munitions, transportation, and aircraft industries are dependent upon many rubber products, including such important categories as rubber tires. Rubber is used in industrial equipment, in civilian and military clothing, and for many other purposes.

This industry as here considered covers the following subdivisions:

(1) Natural, synthetic, and reclaimed rubber and the accessory materials required in their processing.

(2) Manufacture of rubber products: Tires, tubes, repair materials, footwear, clothing, mechanical goods, and medical supplies.

(3) Scrap: The collection and sorting of worn rubber products, principally tires and tubes for reclaiming.

(b) *Program for the synthetic rubber and rubber products industry during the occupation*

The recommendations for synthetic rubber and for rubber products are separately listed.

Synthetic rubber.—(1) It is recommended that all plants for manufacture of synthetic rubber, including polymers and monomers, be eliminated and production of these materials prohibited.

Manufacture of rubber products.—It is recommended that—

(1) Aggregate plant or equipment for manufacture of rubber products be reduced to that required for processing allowed supplies of rubber.

(2) Production of military rubber products be prohibited. (See section on Military Disarmament.)

(3) Imports or releases from stock of natural, synthetic, reclaimed, and scrap rubber be limited to 30,000 metric tons per annum.

(4) No allocation of raw materials or controls over distribution of product or exports be required.

(c) *Justification for the proposed treatment of the synthetic rubber and rubber products industry*

The elimination of synthetic rubber production in Germany is an essential step in the industrial disarmament of Germany. The industry is of critical value only during wartime when Germany is cut off from access to supplies of natural rubber.

Complete elimination of the synthetic-rubber industry will make it difficult for the Germans to keep abreast of technological improvements and thus prevent their quickly and effectively reconstituting the industry in the event of war.

The return to natural rubber will not place an additional burden on the German economy, since all her needs for rubber were supplied by imports until 1936. As a matter of fact, natural rubber can be imported into Germany more cheaply than synthetic rubber can be made. Imports of natural rubber in the last prewar years carried heavy tariff charges which were in effect subsidies for the synthetic rubber industry. Removal of these charges and access to world supplies of crude rubber will be an actual advantage to the German peacetime economy.

The level of crude rubber recommended for imports is about 1 pound per capita a year, approximately the domestic consumption before Hitler seized power. Reduction of processing capacity is a logical corollary of the limits set on rubber imports into Germany. No excess equipment will be left available to process any supplies of rubber illegitimately obtained.

16. THE SHIPPING AND SHIPBUILDING INDUSTRY

(See summary of TIDC project No. 13 in appendix D)

(*a*) *Significance of the shipping and shipbuilding industry*

German shipping has contributed greatly to her war potential. German submarines in World War I and again in World War II inflicted losses of such magnitude as to threaten the outcome of the conflict. Merchant ships, including armed raiders, were able to reduce the effectiveness of the Allied blockade.

The facilities and techniques used for building merchant ships are roughly the same as those required for the building of warships. Practically all German shipyards were used in World War II for the production of submarines or other vessels of a military nature. Merchant marine personnel provided a reservoir of replacements which greatly increased the striking power of the German Navy.

The German merchant marine before the war was the fifth largest in the world, exceeded in size only by the merchant marines of Great Britain, United States, Japan, and Norway. In 1939 the German merchant fleet consisted of 2,466 vessels aggregating 4,492,708 gross registered tons. This fleet was largely new; fewer than one-fifth of the vessels were more than 20 years old, and about the same proportion were less than 5 years old. The German merchant marine included vessels of all sizes, but well over half the ships were of more than 500 gross registered tons. The fleet was also well balanced as to types of vessels, i. e., passenger and freight vessels, cargo vessels, and tankers.

German vessels covered most of the world's trade routes, and the participation of German vessels in German foreign trade was higher than that of practically any other country. In 1936, 65 percent of German sea trade was carried in vessels under the German flag. Corresponding percentage figures for other countries were: Japan 65, Britain 58, Norway 58, Italy 57, United States 34, Netherlands 28, France 26.

is significant that whereas production facilities in most of the major industries can be substantially expanded in from 6 to 12 months, expansion of the power facilities upon which they depend for their supply of electric energy usually takes considerably longer.

The total electric generating capacity of Germany in 1944 is estimated at approximately 22,000,000 kilowatts. Of the total electric energy used in that year 65,000,000,000 kilowatt-hours, or nearly 87 percent of the total, were consumed by German manufacturing industries. A small group of vital industries—iron and steel, ferroalloys, calcium carbide, synthetic oil, aluminum, magnesium, chlorine and caustic soda, synthetic ammonia, and machinery production—probably accounted for well over 50 percent of total industrial consumption of electric power. Combined consumption for domestic use and by small businesses, agriculture, electrified railroads, and in essential public services (street railways, public lighting, water supply, sewage disposal, etc.) was only 13 percent of the total power consumed in Germany in that year.

For electric generation, water power is of primary importance only in south and southwest Germany. Over four-fifths of the generated and delivered power in Germany as a whole is derived from steam or thermal plants, and more than half of the thermal power generated is derived from Braunkohle. The Braunkohle stations are generally located on or close to the coal fields because its transport is uneconomical, but thermal stations using Steinkohle are usually situated in, or near, the large towns, or close to the large industrial plants which they serve. The generating plants of Germany are interconnected by an extensive and intricate system of transmission lines of such nature that damage may be quickly bypassed and power supply maintained.

The electric power industry covers the production, transmission, and distribution of electric power by both industrial plants and electric utilities. Production comes from (1) hydroelectric plants and (2) steam plants generating power from either Braunkohle or Steinkohle.

(*b*) *Program for the electric power industry during the occupation*

It is recommended that—

(1) Aggregate capacity be reduced to 9,000,000 kilowatts by elimination of excess generating capacity.

(2) Removed plants include all underground plants and all other plants not in exposed places.

(3) All plants chosen for removal be Steinkohle plants or those which are integral parts of industrial plants.

(4) Production for all approved German uses be allowed, plus production for limited power exports from the Rhineland-Ruhr regions to western Europe. After the 2-year plant removal program has been completed such exports should furnish no more than 5 percent of the power requirements of the receiving country.

(5) German coal allocations be under Allied supervision in order to prevent unauthorized electric generation by either public power systems or by industrial power plants.

(6) Deliveries of power be limited as necessary to enforce production levels set on such commodities as calcium carbide, chlorine, caustic soda, and fixed nitrogen. No power shall be delivered to electric furnaces or to light metal reduction plants.

(7) Imports of power into Germany be encouraged in order to increase dependence of Germany on adjacent United Nations' countries. Imports from former German areas, such as Silesia, Sudetenland, and Austria should be discouraged but not prohibited.

(c) Justification for proposed treatment of the electric power industry

The aggregate capacity recommended in the foregoing section is based on the following estimates of minimum postwar needs for electrical energy, in billions of kilowatt hours:

Electrochemical industries	1.3
Mining	7.3
Engineering and other industries	11.4
Industry	20.0
Domestic use and small businesses	5.0
Agriculture	1.0
Essential utility services	1.5
Electrified railroads	1.0
Total consumption	28.5
System losses	5.1
Required energy supply	33.6
Net imports	1.6
Generation requirements	32.0

Total consumption of 28.5 billion kilowatt-hours of electric energy per year would permit an annual industrial consumption of about 20,000,000,000 kilowatt-hours. Total industrial consumption was 65,000,000,000 kilowatt-hours in 1944, less than 19,000,000,000 kilowatt-hours in 1933, and 23,000,000,000 kilowatt-hours in 1934, when the Nazis had already initiated preparations for rearmament. This industrial consumption (20,000,000,000 kilowatt-hours a year) is believed to be adequate for the German civilian economy in peacetime, but it precludes use of electric energy for the unrestricted production of certain strategic war materials such as synthetic oil, light metals, carbide, and other electric furnace products which are large consumers of electric power.

Approximately 9,000,000 kilowatts of installed generating capacity will meet the above requirements for energy, if the peak load on the system is approximately 8,000,000 kilowatts and if Germany continues to receive net imports of energy from Switzerland and Austria at about the prewar level which in 1937 amounted to more than 1,000,000,000 kilowatt-hours. The resulting average operating rate will be about the same percentage of capacity as that achieved by the Germans in the difficult year of 1944.

Continuing studies should be undertaken to show whether imports should be increased and a corresponding amount of generating capacity removed.

Limitation of power-generating facilities is an important aspect of the over-all disarmament program. Heavy industry cannot operate without electric power. German rearmament would thus require not only a rebuilding of production facilities in the strategic war industries but would also involve the more difficult and more time-consuming task of expanding the power facilities serving these industries.

German shipyards before the war had an annual capacity of about 600,000 gross tons of merchant shipping. Annual ship launchings reached a maximum of 525,829 tons in 1922 and fell to 42,195 tons in 1933, rising sharply thereafter to 480,797 tons in 1938. It is estimated that in mid-1939, 137 cargo vessels aggregating 401,000 tons, and 9 tankers aggregating 79,999 tons, were under construction in North Sea and Baltic yards.

(*b*) *Program for the shipping and shipbuilding industry during the occupation*

It is recommended that—

(1) Transoceanic shipping and yards and facilities for the building of transoceanic vessels be eliminated.

(2) Yards and repair facilities for inland shipping be permitted.

(3) Sufficient shipbuilding capacity be allowed to provide the total tonnage capacity necessary for inland shipping, as determined by survey.

(4) Size and type of vessels be restricted in order to prevent transoceanic traffic under German control (size and type specified by Military Disarmament Program).

(5) Sufficient inland and coastal shipping and commensurate facilities be allowed to maintain domestic services and services to nearby foreign countries.

(6) Supervised allocation of steel be used to aid in providing adequate controls over permitted shipbuilding.

(7) No building of ships for sale to other countries be allowed.

(8) Vessels seized by Germany from other countries be returned to the country of former registry under the restitutions and reparation program.

(9) The training of seagoing personnel be controlled.

(*c*) *Justification for proposed treatment of the shipping and shipbuilding industry*

The importance of controlling the German fleet as one aspect of German economic disarmament is specifically recognized in the Berlin protocol:

> The Conference agreed in principle upon arrangements for the use and disposal of the surrendered German fleet and merchant ships. It was decided that the three governments would appoint experts to work out together detailed plans to give effect to the agreed principles. A further joint statement will be published simultaneously by the three governments in due course (art. V).

The recommendations made in this program permit the Germans to have a merchant fleet adequate to handle the inland and coastwise shipping necessary for the civilian economy. At the same time the limitations on the size of the fleet and on the types of vessels bar the Germans from engaging in transoceanic operations in peace or war. Under the proposed controls the Germans will lack the fleet for such activities; they will lack the large trained body of merchant marine personnel which could serve as a nucleus for a resurgent German Navy, and they will lack the facilities for building or servicing large merchant or war vessels.

17. THE SOLID FUELS INDUSTRY

(See summary of TIDC project No. 17 in appendix D)

(a) Significance of the solid fuels industry

Coal is Germany's one basic natural resource available in ample supply. In the past Germany has been a large coal-exporting country and in addition has used enormous quantities of coal in her iron and steel and power-generating industries and as a basis for production of chemicals, synthetic oil, synthetic rubber, plastics, and many other items. Coke-oven byproducts were first used in the German coal-tar-dye industry, and later for the manufacture of pharmaceuticals, explosives, plastics, and poison gases. Without her coal resources, which are the foundation of her major industries, Germany would lose much of her ability to wage war.

Coal mining in Germany covers two broad groups—Steinkohle and Braunkohle. On a tonnage basis, production of the two types was of approximately equal importance in prewar Germany. During the war, the production of Steinkohle fell somewhat below 188,000,000 metric tons, but Braunkohle production rose from 187,000,000 metric tons in 1937–38 to 250,000,000 in 1944.

Germany's Steinkohle deposits are concentrated rather close to her borders. Almost 82 percent of production is concentrated in the western areas—the Ruhr (69.2 percent), Aachen (4.3 percent), and the Saar (7.2 percent)—while in the east, Upper Silesia accounts for 13.3 percent and Lower Silesia for 2.9 percent. The Braunkohle fields lie in central Germany west of the Elbe (43.7 percent), and east of the Elbe (25.1 percent), and in the Rhineland (29.7 percent). Production of Braunkohle has been steadily rising since the middle thirties, but because its heat value is only two-ninths that of Steinkohle, it has to be utilized at or near the mines.

The solid fuels industry is here considered as including several additional stages beyond the actual mining of the coal.

(*a*) The coke industry covers the very important step in which coal is distilled, primarily in byproduct ovens, yielding coke and coke byproducts, (*b*) the briquette industry includes establishments engaged primarily in the manufacture of full briquettes, chiefly from Braunkohle, but also to some degree from Steinkohle; (*c*) the gas industry (coke-oven gas and other artificial gas) is also basically a part of the solid-fuels industry, since its products are directly derived from coal.

(b) Program for the solid-fuels industry during the occupation

For purposes of control recommendations, the solid-fuels industry is divided into two headings—the mining, washing, and briquetting of coal, and coal distillation.

Mining, washing, and briquetting of coal.—It is recommended that—

(1) No upper limit be set on the amount of coal to be produced in Germany.

(2) Production of Steinkohle be encouraged for export and reparation.

(3) Production of Braunkohle be encouraged where necessary for German consumption.

(4) Distribution of coal be controlled in order to enforce production limitations on power, fixed nitrogen, coke, tar, iron and steel, and other industries.

(5) Imports be allowed only for those border areas most readily served from adjacent territories.

(6) Exports of Steinkohle be encouraged.

Coal distillation (coke ovens and tar-distillation equipment).—It is recommended that—.

(1) Allowed coke-oven capacity be integrated with allowed steel capacity and with requirements for domestic consumption of gas.

(2) The remaining coke ovens and tar-distillation equipment be removed.

(3) Tar distillation be allowed to the extent necessary to provide chemical industry requirements for tar distillates.

(4) Pitch and surplus tar be burned as fuel or exported.

(5) Production of pitch coke be prohibited.

(6) Deliveries of coal to coke-oven plants be kept under surveillance in order to check on compliance with production limits.

(7) Distribution of tar distillates be controlled as specified in the chemical program.

(8) Imports of coke and tar distillates be prohibited.

(9) No limitation be placed on exports of pitch and surplus tar.

(c) *Justification for the proposed treatment of the solid-fuels industry*

Encouragement of production of both Steinkohle and Braunkohle in Germany is advisable to meet requirements within Germany and in other European countries less favored with coal deposits. Active operation of coal mines in Germany provides a large source of employment. Exports of coal will contribute materially toward payment for needed German imports. It is advisable to require that coal exports be made up primarily of Steinkohle, because of the much greater heating value per ton.

Control over distribution of coal in Germany is a necessary corollary of industry regulation in other fields. The forced exports of coal for reparation will create a coal shortage that can be met only by distribution controls, thus facilitating control of strategic coal-using industries. Imports would tend to vitiate such distribution controls which depend on the relationship between the quantity of coal produced and the quantity that is to be exported as reparation and as payment for required imports.

In most of its uses as a chemical raw material, coal is first transformed into coke and its byproducts. In all industrial countries coal is thus basic to the production of iron and steel, calcium carbide, explosives, etc. However, the Germans have greatly extended the raw material uses of coal, coke, and the coke byproducts into other strategic industries. Consequently, during World War II synthetic oil and synthetic rubber based on domestic coal effectively replaced former imports of petroleum and natural rubber. In many other ways coal served as a raw material for ersatz products and became of increasing importance in the German industrial autarchy. Elimination of surplus coking capacity and controls over allocation of coke and its byproducts will thus effectively check the resurgence of many of the basic strategic industries.

18. THE TRANSPORTATION INDUSTRY

(See summary of TIDC project No. 32 in appendix D)

(a) Significance of the transportation industry

The efficient and highly developed transportation system of Germany was one of the paramount factors in offsetting the effectiveness of Allied air power by making possible continued movement of supplies for industrial production and for the armed forces. As a result of the prewar and wartime expansion and integration of transportation facilities, Germany was able, by decentralizing production in widely dispersed plants, to overcome to a considerable extent the stoppages in production caused by strategic bombing. The high level of production attained by the end of 1943 does not appear to have flattened out until intensified bombing of the transportation facilities themselves in the summer and fall of 1944 made traffic movements increasingly difficult.

Transport in Germany is predominantly by rail. In 1937 German long-distance freight was distributed as follows, according to type of carrier or traffic way:

Types of transportation	Freight volume (millions of metric tons)	Percent of total
Railroads	482.2	70.2
Inland waterways	133.1	19.4
Long-haul trucks	15.3	2.2
Sea transportation	56.7	8.2
Total	687.3	100.0

Competition to the railroads by waterway and highway transportation was kept in abeyance by various legal measures and by an astute traffic and rate policy devised by the Reichsbahn. Under the rearmament program, however, the government fostered development of highways (Autobahnen) and canals to serve as strategic adjuncts to the railways in case of war.

The German Reichsbahn in 1938 had 38,000 kilometers of single track line and 24,800 kilometers of line with more than one track. Rolling stock included 22,100 locomotives, 595,000 freight cars, 20,100 baggage cars, and 61,000 passenger cars. By June 1944 the Germans are reported to have had on their extended rail lines 38,000 locomotives, 1,334,000 freight cars, 26,700 baggage cars, and 74,100 passenger cars.

Highly centralized administration of the railroad system has contributed greatly to its efficiency. Before Hitler seized power, rail carrying capacity was expanded by double-tracking of a considerable mileage of lines, by developing a very effective signal system, and by increasing the size and quantity of repair facilities and terminal buildings. Under Hitler, railway and postal personnel, numbering 1.5 to 2 million persons, was disciplined and regimented so that it might better serve as an auxiliary to the armed forces.

Prior to the war the rate policies of the Government-controlled railways had a considerable influence on the expansion of facilities and services within Germany and on bringing those of other European countries under German domination. During the war large amounts of equipment and rolling stock were seized in occupied countries, and their transportation systems made tributary to Germany, in some cases by rerouting. The transportation systems of the satellite countries and neutrals were fettered by agreements dictated by Germany.

(b) Program for the transportation industry during the occupation

The transportation industry is here taken to include railroad lines, locomotives, rolling stock, and waterways.

It is recommended that—

(1) Railroad lines of predominantly strategic importance be deprived of surplus trackage not required by normal peacetime use.

(2) Production of locomotives and rolling stock be limited to necessary replacement and to additions required to bring aggregate stock up to approved civilian requirements.

(3) Superfluous repair facilities and terminal buildings of the transportation system be removed.

(4) The railroad system be centrally administered by the Allied Control Commission during the period of occupation but be decentralized before reverting to German administration.

(5) Waterways of international importance, such as the Rhine, Oder, and Danube Rivers and the Midland, Dortmund-Ems, and Kiel Canals, be internationally administered.

(6) Records of commodity movements by rail and by water be maintained and reports made in order to provide surveillance of industrial activities and movement of materials.

The supply of merchant shipping facilities for operation on German inland waterways is dealt with under the program of the shipping industry and the supply of trucks for highway transportation under the program for the automotive industry. The return of or payment for transport facilities looted from European countries will be handled under the Restitutions and Reparations Program, and the elimination of German interests in foreign transportation systems under the External Security Program.

(c) Justification of the proposed treatment of the transportation industry

Due to her geographical location, Germany serves as an essential link between certain of her neighbors. Nevertheless, this fact cannot justify the assumption that the interests of international transit require the maintenance of all existing German transportation services, some of which were developed for war purposes. Inasmuch as goods in international transit constituted in 1936–37 only about one-fourth of 1 percent of the total German freight traffic, such curtailment of German transportation facilities as is recommended for security reasons will not prevent Germany's carrying her legitimate share of transit freight. The contemplated reduction in the capacity of the transportation system will, however, restrict its uses to the needs of the civilian economy.

Efficient administration of the rail and waterways of Germany in the period immediately ahead will be essential to the execution of the

objectives of military government. Supplies must be moved with dispatch from rural to urban areas to prevent starvation in the cities, and waste. There will be considerable movement of occupation forces and displaced persons, and freight movements on a very large scale once the program for removal of capital equipment on reparation account is under way. For these reasons Germany's transportation system should be centrally administered by the Allied Control Commission. Before the system reverts to German administration, however, it should be decentralized in order to prevent the nation-wide integration of facilities that constituted much of the war potential of the transportation industry.

International administration of waterways of international importance is desirable because the Rhine, Oder, and Danube flow through countries that do not have representatives sitting on the Control Council, and because traffic to and from these countries passes through the Midland, Dortmund-Ems and Kiel Canals.

Records of commodity movements by rail and by water will provide a valuable means of checking on the rate of industrial operations and of detecting violations or evasions of industrial disarmament measures respecting reduction of capacity and of controls over allocation of raw materials and distribution of products and over imports and exports

SECTION III. A SCIENTIFIC DISARMAMENT PROGRAM

CONTENTS

	Page
A. The basis of the FEA scientific disarmament program	167
B. Background of modern German science	168
1. Period following World War I	169
2. Science and research under the Nazi regime	170
C. The nature of the problem	171
D. A detailed program	172
1. Elimination of certain facilities	173
(a) Discussion of recommendations affecting facilities	174
2. Licensing of research projects	175
(a) Discussion of recommendations for controlling research projects	176
3. Control of financing of scientific research	181
(a) Discussion of recommendations for control of the backing and financial support of research	182
4. Control of scientific personnel	183
(a) Discussion of recommendations for control of personnel—scientists, technicians, laboratory workers	183
5. International agreements	187
(a) Discussion	187
6. Administration	187
(a) Discussion	187
E. Feasibility of scientific disarmament	188
1. Post-occupation period	189

Section III

A SCIENTIFIC DISARMAMENT PROGRAM

A. The Basis of the FEA Scientific Disarmament Program

Among the separate study projects contemplated in the FEA Interim Report of January 10, 1945, were included two dealing with research: Project 3, post surrender treatment of German engineering and research related to armament, munitions, and implements of war (including aircraft); project 4, the post surrender treatment of German engineering and research in the "secret weapon" field. At the request of the FEA the Office of Scientific Research and Development and the National Advisory Committee for Aeronautics undertook project 3. These two bodies assigned the study to a committee composed of members of the National Academy of Sciences. This working group has submitted a report for project 3, in which emphasis is placed upon civilian research and pure science. Project 4 was delegated to an ad hoc committee of the Army and Navy which also accepted responsibility for project 1, arms, ammunition, and munitions of war, and project 2, aircraft. By defining a "secret weapon" to include improvements upon known military equipment, the report on project 4 has covered the general field of military research and related civilian aspects.

In its preliminary United States program for German economic and industrial disarmament of April 15, the FEA proposed that all scientific research and development in Germany related to arms, ammunition, or implements of war be prohibited. (See appendix C.)

The subsequent directive to commander in chief of the United States Forces of Occupation regarding the military government in Germany (appendix E) contained the following statements bearing on the control of research:

> 31. As an additional measure of disarmament, the control council should—
>
> A. Prohibit initially all research activities and close all laboratories, research institutions, and similar technical organizations except those considered necessary to the protection of public health;
>
> B. Abolish all those laboratories and related institutions whose work has been connected with the building of the German war machine, safeguard initially such laboratories, and detail such personnel as are of interest to your technological investigations and thereafter remove or destroy their equipment;
>
> C. Permit the resumption of scientific research in specific cases only after careful investigation has established that the contemplated research will in no way contribute to Germany's future war potential and only under appropriate regulations which (1) define the specific types of research permitted; (2) exclude from further research activity any persons who previously held key positions in German war research; (3) provide for frequent inspection; (4) require free disclosure of the results of the research; and (5) impose severe penalties, including permanent closing of the offending institution, whenever the regulations are violated.
>
> Pending agreement in the control council you will adopt such measures in your own zone.

The need for measures to control German scientific research and development as part of the over-all program of Great Britain, USSR, France, and the United States for postwar treatment of Germany was subsequently affirmed in the Berlin Protocol, which states—

> 15. Allied controls shall be imposed upon the German economy but only to the extent necessary—
>
> (c) To control all German public or private scientific bodies, research and experimental institutions, laboratories, etc., connected with economic activities.

The FEA program for scientific disarmament of Germany is based upon the studies in projects 3 and 4 and additional material prepared within the enemy branch. Specific recommendations of the program are in accord with the broad policies contained in the Berlin Protocol and the directive regarding the military government in Germany.

B. Background of Modern German Science

Germany's extraordinary development of the power to make war is largely the result of her preeminence in many fields of natural science. While it would be an exaggeration to say that the development of German science is attributable to sinister motives, there can be no doubt that both the German state and German industry were quick to turn German scientific potentialities to their own account and harness them to the service of their political aims.

State control of scientific institutions and scientific research was a natural part of the pattern of rule that made Germany a menacing anachronism. In 1911 the Kaiser Wilhelm Society for the Advancement of Science was founded, and research institutes for chemistry, physical and electro chemistry, and biology were established. Until recently the society operated over 37 separate institutes, extending to such fields as medicine, law, and the humanities. Financial support came largely from the Government and private industries.

The period after 1911 also saw the growth of domestic cartel organizations which resulted in a centralization of research in particular industrial fields. In addition to maintaining laboratories for research and testing connected with the production problems of individual plants, I. G. Farben, Krupp, and various cartel groups supported large research institutes. A great variety of projects, which later proved to have profitable commercial use, were undertaken. German industries had access to new discoveries throughout the world by their membership in international cartels in which contracts for division of markets were in many instances reinforced by agreements for pooling of patents and interchange of technical information.

A major contribution of scientific research to German aggression was the discovery, shortly before World War I, of a process for the fixation of atmospheric nitrogen. This freed Germany from dependence upon imported nitrates for her explosives industry and made her less vulnerable to the effects of blockade. However, shortages in other raw materials and in foods assumed strategic importance when the Army's plan for a short war failed to materialize. This factor was to influence trends in Government-inspired research during the postwar period, particularly on such products as synthetic oil and rubber, and more generally upon a host of smaller items necessary to maintain an army in the field. During hostilities, other

nations cut off from German products were able to develop their own industries, notably chemicals and drugs, and thereby reduce their dependence upon German sources. While this somewhat dispelled the myth of German invincibility in the chemical field, it did not lessen the belief that the Germans would continue to be ahead of other countries in chemical progress. Following the war, the Germans were able to capitalize on this belief and revive their cartel connections.

1. PERIOD FOLLOWING WORLD WAR I

Following the war German research reestablished itself with surprising speed. When it became clear that Germany would be under Allied supervision, the Notgemeinschaft der deutschen Wissenschaft (Emergency Fellowship of German Science) was formed to save German science. Appeals abroad for help led to a flow of funds, food packages, laboratory equipment, and scientific publications. I. G. Farben and other German firms contributed equipment and materials. The bulk of these collections were disbursed for student aid and research projects selected by the Emergency Fellowship.

Although these humanitarian activities ostensibly aimed at preserving learning in a disrupted society, the organizers were five prominent scientists known in Germany for their long collaboration with the General Staff or for their pan-German views. Military research in the postwar period appears to have been started with the support of these funds. By 1921 the German Government was furnishing annual support from a secret fund amounting to at least 20,000,000 reichsmarks. With the revival of industrial activity in the 1920's, research in Government departments, universities, public and private institutes, and industrial laboratories was carried on more extensively than before the war.

The German General Staff, outlawed by the Treaty of Versailles, had never completely ceased to function. Former members gradually resumed their activities from the obscurity of minor Government posts. Research and experiment were directed under their guidance toward improving and testing munitions of war and providing substitutes for the raw materials which Germany lacked. A training center for officers at the Technical Institute in Charlottenburg was easily achieved since the Allies had not attempted to limit the supply of German engineers. By 1926 military economists trained there were working in military districts with manufacturers who were handling the General Staff research and production projects.

In the postwar period the active planning to rebuild the German war machine extended outside Germany. Some plants and many German scientists moved to foreign countries beyond the jurisdiction of the Allied Military Control Commission to experiment with and produce military products. A secret agreement concluded between Germany and Russia in 1922 provided for German undercover rearmament in Russian territory. The agreement was signed for Germany by the commander in chief of the Reichswehr at the order of the Social Democratic President of Germany, Friedrich Ebert. Under this arrangement the Junkers Co. built a large plant for military aircraft in Moscow, and several other German firms carried on armament research and production. As early as 1926 a shipload of arms was sent to Germany.

Similar activities, though on a less extensive scale, went on in Denmark, Sweden, Finland, Switzerland, and Spain. Research upon submarine construction prohibited to Germany was conducted in Spain where two model submarines were built. German foreign economic penetration, such as the establishment of air lines in South America, furnished a testing ground for the research in aeronautics which the Germans carried on at home and at their foreign plants. German engineers were employed by foreign armament companies in Belgium, Czechoslovakia, and elsewhere abroad where they preserved special skills and kept up with current developments. Gradually these activities were transferred back to Germany, the majority of them before Hitler's announcement to the world that Germany was to rearm.

2. SCIENCE AND RESEARCH UNDER THE NAZI REGIME

The years after 1933 saw large increases in Government expenditures on research, especially for new export products for badly needed foreign exchange, strategic materials lacking in Germany, and modern army equipment of all types.

All research facilities necessary to war preparation were utilized, but it was not until 1940 that the Reichsforschungsrat (National Research Council) with numerous subdivisions was established "to coordinate German research." Although justified as a war measure, this was, in part, an attempt by the Nazi political group to take command of all German research, a move which the industrial interests were able to neutralize through their dominance in the leading research institutes.

There was less tendency in Germany in the early days of the war to convert pure scientists into research and development engineers than in Allied countries where the proportion of engineers in industry specializing in the theoretical aspects of applied science was lower than in Germany. In spite of their willingness to serve on projects related to the current needs of their armed forces, a large section of German academic scientists carried on work which had no immediate war application.

With the increased pressure upon German production resulting from Allied bombing, in September 1944, Speer set up a commission for research planning, empowered to stop unpromising work. This speeded up certain military projects and reduced the number of changes in design which had held up production of new weapons, including the rocket bomb.

Before 1941, occupation in research or engineering was not a ground for complete exemption from military service, though skilled industrial workers were removed from front-line service when labor shortages were imminent in vital industries. Later, in 1943 and 1944, procedure was developed for conserving scientific personnel.

Although the lack of a uniform policy toward research and technically trained manpower was evident during the war, German scientists and engineers in war industries produced startling varieties of new designs and techniques which enabled Germany to maintain a high level of production and keep up with the Allies in the latest improvement in implements of war. Several new types of weapons, in the development stage at the end of the war, would have seriously taxed Allied strategy had they been manufactured in effective quantities.

C. The Nature of the Problem

Arguments against control of scientific research center around the sanctity of educational and scientific freedom, the necessity for research in the modern state, the difficulty of controlling an activity which in one aspect is as intangible as human thought, and the greater feasibility of controlling dangerous items at the development or production stage rather than at the research level. To grant that there is some validity in these arguments does not, however, alter the fact that to permit Germany complete freedom in scientific research would be to leave in her hands a potent weapon which might again some day be used for purposes of aggression.

Though the FEA program for the treatment of German research, like other programs for the disarmament of Germany, has as its first objective the security of the world against German aggression, it holds that achievement of this goal is not incompatible with the preservation of educational freedom. The proposed measures are directed not against scientific discovery as such but against its application in ways inimical to the maintenance of peace. Against whatever threat to educational and scientific freedom may be involved in imposing the restrictions deemed necessary for this purpose must be weighed the possibility that a future German victory might imperil all freedom of education.

Recognition of the importance of research in a modern state is inherent in the program. It provides for the elimination or control of scientific activities of a clearly dangerous nature and for measures which will permit the Allied authorities to follow what is taking place in German research; yet it leaves ample leeway for research activities looking toward the development of products of a peaceful nature. However, the necessity for research, at least in the short run, is open to question. The Germans could exist for a considerable period and carry on known techniques with only a minimum of testing laboratories for public health and industry. Should it develop at some time in the period of occupation that extensive evasions of regulations occur, the control authorities might be faced with the choice of abandoning control measures or adopting a still stricter, but possibly more easily enforced, program of closing for a time all laboratories except those connected with public health. If such a severe course should be forced upon the authorities, it would less seriously hinder German production than certain of the proposed industrial controls. Furthermore, it is contended that the resultant loss of German scientific contributions would be of less consequence to the civilized world than avoiding the ravages of another German war.

The argument that control of scientific research is not feasible because of its intangibility overlooks the nature of the process of research and development that generally precedes actual production. A scientist with equipment no more elaborate than writing materials may discover a fundamental principle of matter or plan the basic mechanical elements of a new military weapon. Admittedly, such individual work cannot be controlled. However, the work of the individual scientist is usually only an initial step, or a link, in the process leading from discovery of principle to the manufacture of a finished product. The great bulk of significant experimentation today requires collaboration between separated workers in the same field, a laboratory

supplied with apparatus of some kind, and financial support. Thus, the process from experimentation through production involves tangible activities and physical properties of which control is practicable.

In general, after the initial laboratory discovery, pilot plant runs, the testing of models, field trials, and the solution of new problems may consume years before a usable product is turned out. This fact has been advanced as an argument for dispensing with control of research and concentrating control upon the later stages of development or production. However, while there may be such a time lag in the evolution of new products, in instances where the principles are known and the problem is clearly defined, the period between laboratory application of the principles and manufacture of the product may be very short. For this reason, regulations which will permit peaceful civilian research but make possible the detection of dangerous discoveries before they reach the stage of production must apply to the research laboratories and processes as well as to the pilot plants, the testing fields, and the factories.

The FEA recommendations for control of scientific research are directed toward tangible activities and equipment, supervision of which is possible. The points of approach are the main elements present in most research activities. These are facilities, the laboratories and other physical appurtenances of experimental work; projects, the subject matter of research; backing and financial support, which in most instances directs the type of work undertaken; and scientific personnel, the pure scientists, engineers, and other technical workers.

The objectives of the program closely parallel those of the industrial disarmament measures proposed as part of the over-all FEA program. Military research is to be eliminated, and experimental activities which, though connected with peacetime industries, may lead to the development of products of significance to a war potential are also to be eliminated or limited. Because the completely unpredictable implications of the use of atomic energy make control of all research connected with nuclear fission of the greatest military importance, pure chemistry and physics must come under regulations heretofore unnecessary with the conventional weapons of the past. Control measures are to apply equally to all types of laboratories, though it may be found that less supervision will be required over pure science laboratories than over those associated with industrial plants. The elimination of Government control of research, which has permitted the wide use of German science in war planning, is also one of the objectives.

It is believed that the measures proposed are not so severe that a spirit of resentment will be kept alive among the German people and dangerous research driven underground. On the other hand, they are such that, with conscientious administration, they will prevent interested groups within Germany from utilizing scientific research and development in the creation of armament and yet at the same time will present no hindrance to the application of scientific discovery for the development of peaceful industry.

D. A Detailed Program

The following measures are recommended for the control of German scientific research as an element of war potential.

1. ELIMINATION OF CERTAIN FACILITIES

Facilities as used here include all laboratories, testing equipment, proving grounds, pilot plants, model tests, and other physical appurtenances of research in any form. It is recommended that the occupying authorities should—

(*a*) Close during the initial occupation period all laboratories except those connected with public health.

(*b*) Gather intelligence related to military research and recent discoveries. Confiscate all plans, test data, and reference material used in facilities listed in (*c*).

(*c*) Eliminate by destruction, or dismantling and removal—

i. Laboratories and installations devoted purely to military research and testing of arms, ammunition, and instruments of war, including aircraft.

ii. Aeronautical laboratories and related equipment, such as wind tunnels and appurtenances; training equipment and testing equipment for all aircraft components.

iii. Laboratories devoted to research on atomic energy.

iv. Test installations for submarine detecting and related communications devices.

v. All underground installations for research or manufacturing, except legitimate, peacetime mining and quarrying operations; and all bombproof structures used for research or manufacturing except safety structures required in permitted peacetime industrial activities.

vi. All unique testing equipment of special size or type, the elimination of which would constitute a bottleneck in military production; for example, largest sizes of machines for testing of stresses in metals or machine assemblies.

(*d*) Eliminate or, in special cases where such action is considered advisable or feasible by control authorities, convert for use on permitted peacetime research projects—

i. Laboratories which before the war were used for research upon permitted peacetime projects but were converted to war use.

ii. Laboratories devoted to study of problems related to industries which are to be eliminated, such as synthetic oil or electronics. (See sec. II.)

iii. Laboratories and testing devices related to—

(i) Study of all special equipment used in industries to be eliminated, such as synthetic oil.

(ii) Study of equipment of special sizes or types, the use of which has been forbidden in industries subject to limitation of annual productive capacity, such as the steel industry.

e. Register all remaining laboratories with description of all facilities.

f. License and permit to resume operation all laboratories and facilities to be retained after consideration of—

i. Prior use.

ii. Presence of special equipment.

iii. Projects to be undertaken.

iv. Source of financial backing.

v. Personnel to be employed.
vi. In case of new laboratories, the existence of similar facilities where projected work could be carried on.

(a) Discussion of recommendations affecting facilities

All laboratories within Germany which have been the direct source of studies of military equipment should be eliminated by permanent closing and subsequent removal or destruction of equipment. Those under German control in foreign countries should receive the same treatment.

Pure science laboratories in educational institutions and research institutes devoted before the war to peacetime projects could, in most instances, be safely reconverted from their temporary wartime use. Laboratories associated with munition plants and military proving grounds should be removed as part of the general elimination of the larger unit. New laboratories built during the war for military research, often in secluded locations remote from normal industrial areas, should be eliminated. Preservation of those of a patently nondangerous nature should be left to the discretion of an administrative body.

As the Germans will be prohibited from operating both military and civilian aircraft, removal of all aeronautical laboratories will not affect civilian activities. A break in the continuity of aeronautical research would slow down rebuilding of a military air force.

Certain special installations have been singled out for elimination. Those relating to submarines deserve particular attention in view of the reliance Germany placed upon this offensive weapon during both wars. Underground installations may be expected to be the site of secret military research during the early stages in any rearmament program that Germany may start in the future. They would be difficult to observe from the air and hence less vulnerable to sanctions in the form of punitive bombing.

In the early occupation period the gathering of intelligence and confiscation of military plans and reference material should be carried out. But this will also remain a continuing measure during the entire Allied occupation in order to discover additional hidden archives and to prevent any group within Germany from reassembling similar material.

Laboratories relating to public health, including those studying food production, should remain open. Reopening of other permitted laboratories is to be based upon careful study of each individual case. This will require a larger force to set up the system of registration and licensing than would blanket permission for reopening of all laboratories of a particular type. Thereafter, less personnel will be needed for enforcement of control regulations.

Allied policy should permit maintenance of industrial laboratories consistent with the types of economic activities remaining open to the Germans under the military and industrial disarmament programs. Where civilian industrial activities under this program have been eliminated or limited in volume because they form part of the industrial base for war potential, scientific and research activities in similar fields should also be considered for elimination or restriction. This would deter the rapid revival of the industrial activities to which they relate.

War damage and elimination of military facilities will reduce the number of laboratories below the prewar figure. The question will arise later whether new laboratory construction in a permitted field is justified in view of then existing facilities. Although Allied policy should be to encourage research along peaceful lines, it should be borne in mind that the existence of extensive, well-coordinated research laboratories contributed substantially to the rapid pace of German rearmament under the Nazis. Therefore, without suggesting that a ceiling be placed upon the number of laboratories, or that their number should be related directly to the volume of economic activity, excess of research facilities would be a dangerous condition in the later occupation period when the Germans have built up their industrial volume from its present low level.

Where German technical and laboratory equipment can be moved, its distribution to educational institutions and industrial laboratories in all neighboring Allied countries will aid the program for decreasing German economic dominance in these areas.

2. LICENSING OF RESEARCH PROJECTS

It is recommended that all research projects, or broadly the subject matter of research and testing, shall be controlled by licensing. Licenses shall be obtained from control authorities before any research work is initiated.

No license shall be issued for the study of—

(*a*) Military products or techniques. (See items in reports on projects 1, 2, and 4.)

(*b*) Aircraft or aeronautics.

(*c*) Atomic energy.

(*d*) Peacetime research projects related to fields from which future secret weapons may be developed. Control authorities may set up a specific list of such projects related to the following or additional fields:

i. Propellant powders.
ii. Propellants for power.
iii. High explosives.
iv. Radioactive materials, except in medical research.
v. Military gases.
vi. Electronics.
vii. Remote control or target-seeking missiles.
viii. Military use of bacteriological materials.

(*e*) Products of industries which are to be eliminated or special equipment necessary to production, such as—

i. Synthetic oil and gasoline.
ii. Synthetic rubber.
iii. Aluminum and magnesium reduction.
iv. Abrasives.
v. Antifriction bearings.
vi. Electronics (licensing of projects related to manufacture of domestic radios left to discretion of control authorities).
vii. Chemicals with especial military uses.

(*f*) Equipment of special style and size, use of which may be forbidden in industries where annual capacity is limited. (For

example, steel and possibly certain aspects of automotive industries.)

(*g*) Products of industries in which control takes the part of limitation of style or use of product. (For example, oceangoing ships.)

(*h*) Other products, processes, or equipment in industries where production is not controlled but where Allied authorities believe research activities may prove dangerous as a source of present or future military development.

Special license (implying added surveillance) may be issued for research in industries or fields in which—

(*a*) Production is permitted, subject to control on capacity or type of products, such as—

i. Coke (related to steel industry).
ii. Chemicals.
(*a*) Fixed nitrogen.
(*b*) Nitric acid.
(*c*) Calcium carbide.
(*d*) Chlorine.
(*e*) Sulfuric acid.
(*f*) Primary tar distillates.
iii. Chemical wood pulp.
iv. Machinery.
v. Machine tools.
vi. Automotive.

(*b*) Substitutes or special equipment may lead to—

i. Evasion or avoidance of other industrial controls. (For example, new processes increasing output without increase in rated capacity.)
ii. Production of strategic materials.

(*c*) Other research which, at the discretion of control authorities, may be permitted but is deemed to require more than ordinary control.

License may be granted for research not covered above and should be encouraged in fields related to—

(*a*) Medicine and public health.
(*b*) Agriculture.
(*c*) Social sciences, etc.

Disclosure of results of licensed research should be insured by—

(*a*) Making it obligatory to report progress and results to the control authorities and to file with them copies of all published material on discoveries.

(*b*) Continuance of German patent system subject to—

i. Grant of nonexclusive license at reasonable terms to any prospective domestic user of patent.
ii. Free disclosure abroad of all German technical information, patentable or otherwise; and prohibition of German ownership of any foreign patent rights.

(*a*) *Discussion of recommendations for controlling research projects*

Measures for directing the subject matter of German scientific research and development furnish a positive method of control. Military research, of course, would be ruled out. The impossibility of predetermining the future strategic importance of new weapons

and implements of war, and the detecting of all military significance in products now having only civilian use, renders any adequate definition of military research exceedingly difficult. For this reason it will be necessary to grant sufficiently broad powers to an Allied scientific administration, which should make a careful analysis of the significance of new inventions, and processes as they are produced by the Germans. Fortunately, as long as the Allies maintain effective intelligence and inspection functions in Germany, the time lag between laboratory discovery and development of a perfected implement of war will permit discovery and curtailment of most dangerous projects which have not been caught at the research stage.

The committees on projects 3 and 4 have recommended the discontinuance of all experimentation or study of military items and the supervision of all permitted research. Control would be maintained by requiring full disclosure of plans through a licensing system, of progress through inspection and reporting, and of final results through reporting and publication.

A positive policy of screening all research projects before their initiation is permitted rather than to allow blanket permission (except in the case of laboratories necessary to the protection of public health) will require careful definition of the specific types of research which can safely be permitted. The details of the program for carrying out this policy will be shaped slowly by the administrative group as problems relating to the German economy present themselves. At this point only the broad categories can be discussed and these principally from a negative point of view.

Military research.—In the military field, research on all items listed in projects 1 and 2, set forth in section I (military disarmament) of this study, will be forbidden The feasibility of long-term enforcement of such a control has been questioned in some quarters However, as is emphasized in project 1 the continuity of research in the building up of a modern army is of great importance. The effect of elimination of these activities in Germany even for a limited period of time will be to slow down any future rearmament program, should control eventually prove impossible. The denial of civilian aircraft to Germany is coupled in project 2 with the recommendation that all research in the aeronautical field be discontinued. Thus, Germany will be placed far behind other countries in the applications to military aviation of the great advances which will occur in the civilian field.

Nuclear fission and all other aspects of the research and development of atomic bombs must head the list of prohibited research in the military field. With the present uncertainties surrounding the characteristics of the new weapon, the restriction should be definitely extended to related studies on atomic structure in both physics and chemistry. Clear evidence of nondangerousness of any particular branches of atomic research should precede relaxing of this policy.

Secret weapons.—By the very nature of "secret weapons," it is not possible to list with certainty research projects which should be eliminated beyond those of proved military use. The report in project 4 lists several fields in which significant future armament developments may be expected.

(*a*) Propellant powders: Substitutes for the present chemical powders used in rocket propulsion may result from research which

has gone on during the war. Atomic energy may be used for this purpose.

(*b*) Propellants for power, particularly those containing oxygen-bearing components for their combustion, such as hydrogen-peroxide, combined with inflammable compounds, will be sought for air and submarine use with emphasis upon high power-to-weight ratios.

(*c*) High explosives: Present scientific knowledge seems to indicate that no great increase in the effectiveness of conventional explosives measured by the ratios of heat and pressure to weight may be expected. In this field, atomic energy will be most closely studied.

(*d*) Radioactive materials have not been exploited for wartime use, and many basic problems remain to be solved.

(*e*) Military gases are difficult to detect at the research level, but their military scope has been substantially narrowed under present conditions. Many extremely lethal gases are known but are hard to control in use. This is a field of increasing danger for the future, since so far only ethical considerations and fear of reprisal have limited the extensive trial of gases in actual warfare which must precede solution of the technical problems.

(*f*) Electronics have been applied to the control of aircraft and missiles and in the field of communication. Increased use in wartime is certain. Experimentation is difficult to control.

(*g*) Remote control or target-seeking missiles will depend for increased effectiveness on other elements, such as radio, radar, and gyroscopic equipment.

(*h*) Bacteriological items for warfare are difficult to detect at the laboratory stage. Although the use of this weapon has heretofore not been thoroughly tested in the field, as in the case of poison gases, only ethical considerations and fear of reprisal have limited trial under war conditions. It will remain an important potential menace.

Experimentation on certain of the foregoing, such as atomic energy, rocket propulsion, high explosives, and remote-control missiles, requires large laboratory or testing installations and would, therefore, be relatively easy to detect.

The general conclusion reached in the project 4 report is that since the waging of war requires a multiplicity of weapons, "development of secret weapons of sufficient magnitude to constitute a threat of war should make itself evident through many symptoms which are far more obvious to the qualified observer than would be the initial research activities in the individual laboratory." However, as a preventive measure, peacetime research on products which would be related to any potentially dangerous field should be eliminated or subjected to greater supervision than ordinary research for civilian production.

Research in industries to be eliminated.—The FEA industrial disarmament program (see sec. II) recommends the elimination of certain industries, such as synthetic rubber; synthetic oil; aluminum and magnesium reduction; abrasives; antifriction bearings; electronics, except domestic radio production; and certain chemicals. The essential dangerousness of these products unquestionably extends to the research field It is important for complete control that the research

related to production problems and the special equipment needed to produce the prohibited products and their substitutes should also be eliminated, and research in the application or use of the products be closely supervised. Research along these lines will have no economic justification, since production is to be eliminated. The long-term effect of this regulation will be the loss of the techniques and the lack of first-hand knowledge of new developments, which will impede rapid rebuilding of these industries after the removal of Allied control.

Many electronic research problems of most vital military significance were not completed by the end of the war. If work should be permitted at all, the individual scientists would have a far greater opportunity to continue the projects than if all research in electronics was banned. Complete elimination will be difficult to carry out, but surveillance of key individuals and imposition of penalties will effectively discourage most work. It may be noted that the industrial section of the FEA program allows manufacture of domestic radios. Research in small radios might be permitted, if supervised.

Research should be prohibited on certain products not included among those where productive capacity is to be eliminated. Capacity elimination has been limited to those products which could be spared from a civilian economy. Therefore, permitted production of any item should not per se imply that research pertaining to it may safely be carried on, or that prohibition of such research would have significant effect on maintenance of a minimum civilian economy. The scientific members of the Control Council will have an opportunity to add a number of other products, particularly chemicals.

Research where partial elimination of production has been proposed.—In addition to recommendations for complete elimination of certain industries, the FEA program proposes, in certain other industries which have contributed to German war potential, reduction of productive capacity below quantitative ceilings, set with regard for minimum civilian requirements. Research in all these industries should be carefully watched for discoveries and techniques which by increase in efficiency of production would tend to raise actual capacity or output beyond the desired ceiling without need for additional equipment. Research directed toward the development of substitutes for the materials of which production is to be limited should also be placed under control. Discoveries of substitutes might require adjustments in the over-all program.

These quantitative limitations in the case of iron and steel place a ceiling upon the yearly productive capacity, while in the case of light metals the ceiling is upon fabricating capacity. In each instance, limitations are also placed upon the upper sizes of certain fabricating equipment which has been used in the manufacture of special or heavy implements of war. Research upon this special equipment should be forbidden.

In the solid fuels industry excess coking capacity is to be eliminated, and in the chemical industry reduction of excess capacity for a number of heavy chemicals beyond minimum civilian needs is to be carried out. These are fixed nitrogen, nitric acid, calcium carbide, chlorine, sulfuric acid, and primary tar distillates. All research on these products and substitute materials should be carefully watched, as well as changes in industrial processes which tend to reduce the over-all civilian need of the controlled products and permit stock

piling. Possible inclusion of some of these chemicals among those upon which research is prohibited should be considered.

Removal of excess generating capacity in the electric power industry is suggested and new construction may be forbidden. Research has been less significant here during the prewar and war period than in other fields. It is noteworthy that reduction and concentration of uranium ore and production of plutonium require large amounts of electric power.

In the machine tool and machinery industries, where an annual volumetric ceiling by weight of products has been proposed, it is more difficult to generalize. Supervision over the wide variety of products of mechanical inventiveness will require evaluation of the significance to war use of many individual new products rather than simple over-all measures.

It has been proposed to limit the automotive industry to 90,000 small units per year. If this recommendation is accepted, research upon internal combustion engines and automotive components should be restricted. In any event, research projects in this industry should be subject to special scrutiny because of the importance of mechanized army transport and the close relation of automotive to wartime aircraft production.

Chemical wood pulp capacity up to the limits of domestic needs in fine paper and synthetic fibers for the textile industry may be permitted if, as it now appears, foreign exchange for imports of paper and yarn will not be available from Germany's exports, restricted as they would be by other technical industrial disarmament proposals and the immediate effects of reconversion. As pulp is based on one of the few available German war materials, wood, it is a serious question whether research should be entirely eliminated. This would shut off an important source of substitute materials needed to balance the German economy. However, the significance of chemical wood pulp to the production of explosives makes it imperative that closest scrutiny be maintained over research projects on chemical pulp.

In the shipbuilding industry limitations have been placed upon the size of vessels and the types restricted to those for operation in inland and coastal waters. Research projects on marine design and other aspects of the industry should be confined to the permitted types and sizes of vessels. Where it is separable from permitted shipbuilding, experimentation on oceangoing vessels should be prohibited. The plethora of bottoms in the postwar period will of itself suppress most work on marine design, so that no hardship will be involved.

Research upon peacetime products having a possible war use will be largely in the industries mentioned above. Future developments will change the relative significance of many items. Administration of project control must in its essence be flexible and based upon continuing scrutiny of the entire research field.

Permitted research.—As early as possible, permitted research should be defined to aid resumption of normal industrial activities. Aside from projects of the type specifically listed above, German research in peaceful fields should not be discouraged. Although much of recent German activity in the fields of physics and chemistry has been the application of principles to war purposes, even in these branches pure science has innumerable unanswered questions not affected by the

foregoing recommendations. Medicine, agriculture, social sciences, psychology, astronomy, geology, and many other fields are open to the theoretical worker and student.

After reconversion German industry must rely heavily upon industrial research in permitted industries to supply civilian needs and export markets from which foreign exchange for food and other vital imports must come. Factors influencing the volume of industrial activity to finance this research will in turn largely control the volume of research itself. These questions are treated in the over-all FEA program rather than in this section.

Disclosure of results of research and patents.—Imposition upon German scientists and technicians of the obligation to disclose the progress and final results of licensed research projects will furnish the Allied administrative authorities with a useful mechanism of control. This could be made part of the periodic report required of all laboratories or independent workers under the licensing system. Requirement for filing copies of all published scientific material with the Allied administrative authorities would reduce demands upon personnel.

The Executive Committee on Foreign Economic Policy, through its Committee on Private Monopolies and Cartels, has proposed a patent policy for Germany which provides, in brief, that the German patent system should be retained, except that nondiscriminatory domestic licenses at reasonable rates should be granted to all prospective users within Germany. Compensation to the licensor would be assured, and the nondiscriminatory licensing would aid the program for breaking up domestic cartels. All technical information, whether patentable or not, originating in Germany should be fully disclosed for free use outside Germany. Germans would not be permitted to obtain foreign patents upon their inventions or to acquire patents in other countries. An alternate proposal for abolition of the patent system was not recommended by the committee as it would unquestionably lead to extensive concealment of new discoveries.

8. CONTROL OF FINANCING OF SCIENTIFIC RESEARCH

The financing of scientific research and development should also be the subject of Allied control. It is recommended that the control authorities should—

(*a*) Prohibit use of Government or private funds for direct support or subsidy, in or out of Germany, of military research including aircraft and research on all eliminated industries, such as synthetic oil, by—

i. General Staff.
ii. Government war-planning departments.
iii. Government laboratories.
iv. Private laboratories.

(*b*) Prohibit Government subsidy of research except in fields related to public health and welfare.

(*c*) Require as part of licensing system disclosure of sources of all financial backing and use of all funds of all laboratories, Government or private.

(*d*) Require disclosure of sources and disbursement of all funds raised by public collection to aid science and scientists.

(*e*) Consider measures to control size of funds allotted to research in industries where annual production capacity has been limited.

(*a*) *Discussion of recommendations for control of the backing and financial support of research*

To break up the former pattern of close relationship between the German General Staff, Government, and industry in the furtherance of pan-German ideas and the building up of a war machine, the financial backing and support of military and dangerous civilian research should be subject to control by the Allied administrative body. Continuity of development for a modern military machine requires active state support of military research. While separate industrialists in Germany may have supplied initiative and often the funds for this work, reimbursement in the form of subsidy or orders was expected in return. In every case the element of Government direction was present. In civilian research many projects relate to products adaptable to war use or having parallel utility in the variety of weapons and equipment necessary to a large army. Determination not only of the extent but of the sources of financial support for all permitted research is necessary.

Subsidy from the state in the form of direct grants, tariff protection, and tax exemption has assisted strategic German industries, such as synthetic oil and synthetic rubber, to round out a self-sufficiency-for-war program. In many instances the cost of manufacturing such substitutes would have prohibited production without the help of subsidy. Discontinuance of Government subsidy and importation of the natural products will reduce the cost to the German economy. If economic justification is lacking, subsidy from public or private sources should be discouraged for research studies upon all strategic materials. However, research upon materials in which Germany is deficient, such as food, fibers, and others not closely related to war products, should be encouraged.

The source of financial support influences to a large extent the choice of research projects. Contributions for research from known pan-German sources or from groups of formerly active Nazi supporters would be a ground for careful scrutiny of the project at the time of granting a license. Solicitation of funds for private endowment of science or education should be subject to supervision by the Allied group. The activities of the Emergency Fellowship of German Science after World War I and up to the 1930's must not be forgotten. The organization was an effective cloak for the reestablishment of German industrial power and early activities in the armament field.

The use of German funds for foreign research should be forbidden. In the early 1920's German branch factories in Russia, Switzerland, and Finland carried on military research which was later transferred back to Germany when the Allies relaxed their control. The flow of foreign funds into Germany for research in Germany should be confined to permitted projects.

Research financed by trade associations or cross-licensing agreements between units of a single industry might be found to be contrary to the objectives of the program to eliminate internal cartels and combines. Generally, decentralized industrial research is preferable. Smaller units would tend to confine their activities to presently profitable commercial objectives of a permitted nature.

In the case of industries where total capacity is limited, the question may arise as to whether an attempt should be made to limit in any way the over-all volume of research measured by the total of persons employed or funds expended. While no specific recommendation is made upon this point, it would appear that an increase in the percentage of gross income over the prewar figure devoted by the balance of the industry to research should not be encouraged.

4. CONTROL OF SCIENTIFIC PERSONNEL

An adequate scientific disarmament program requires effective control of German scientific personnel. It will therefore be necessary to—

(*a*) Register all scientific personnel including engineers. License all scientific personnel including engineers except—

i. Former key individuals in war research.

ii. Former leading Nazis.

iii. Violators of control regulations.

(*b*) Place technical education under the jurisdiction of a scientific and research section of the Allied control authority.

i. Forbid all technical education in fields devoted to military studies, aeronautics, and eliminated industries; keep under surveillance teachers of military studies and aeronautics.

ii. Consider future limitation of certain courses in physics, chemistry, and advanced engineering (other than in (*a*)).

iii. Encourage indigenous movements which would tend to decrease over-all numbers of technical and scientific personnel, such as raising of professional standards or closing of surplus technical schools; and periodically reconsider Allied policy toward these ends.

iv. Encourage liberalization of technical education through introduction into curriculum of courses in political and social sciences.

v. Encourage technical education in non-German Europe.

(*c*) Forbid the migration of German scientists and engineers, in all but exceptional cases, and subject their foreign travel to particular scrutiny.

(*d*) Prohibit foreign interests in Germany from carrying on forbidden research and, by international agreement, curtail or stop similar activities of German nationals resident abroad. Accredited foreign scientists should enjoy freedom of travel within Germany.

(*a*) *Discussion of recommendations for control of personnel—scientists, technicians, laboratory workers*

The effective control of scientific research and development introduces a new factor beyond those considered in TIDC reports for specific industries—that of handling the human element in research, the scientists, technicians, research workers, and engineers. Ideas regarding the sanctity of science and free education are in part based upon the assumption that errors of thought and conduct are less likely to be found among educated men than those in the rank and file of society. Consequently, a section of American public opinion may feel that attempted control of German scientific personnel is against

our basic principles and that German professional men and scientists were coerced into cooperation with the Nazis' program. An analysis of the German scene, both before and during the war, tends to show that the group in question was subservient to German industry and the state; when the industrial group went beyond activities to build up German prestige and power in foreign trade to the sharply focused program of the Nazis for ruthless action toward world domination, the scientific group followed the same course. The active opponents of the Nazis were, for the most part, in the social sciences rather than in the fields of chemistry and physics, which concern us here.

Another objection which may be raised against control of German science in general is that the human factor is not capable of practical control—that it is impossible to control what a man thinks. Granted that small-scale private research by isolated individuals might in many instances escape detection, the supervision of facilities, projects, and financial backing for research will require control machinery which can handle measures applying to research personnel.

The directive to armed forces requires that persons who have held key positions in German war research be excluded from further permitted research activities. The determination of a fixed list of scientists to be excluded may be difficult. A policy of establishing a continuing procedure for adding or, after appeal, dropping individuals from the category will be a powerful means for implementing the over-all program. At the present time the enforcement of this section has followed closely the general policy of the control council for the removal and exclusion of persons "hostile to the Allied cause."

Registration and subsequent licensing of personnel are measures with important implications for administration of scientific control. Operation of laboratories with unlicensed personnel would be a ground for revoking the license of a laboratory. Work in a laboratory upon forbidden projects would be deterred if it would lead to the revocation of the licenses of personnel involved. Scrutiny of the record of a scientist or technical worker filed at the time of his initial registration and covering his activity during the rearmament and war periods would supply the control authorities with some indication of the kind of projects which might be undertaken in laboratories where he was subsequently employed. Records would be a valuable source of manpower statistics.

Technical education.—The report on the aircraft industry, project 2, recommends elimination of courses in aeronautical education and registration and surveillance of teachers qualified to conduct the courses. The report on project 1 sets up as an objective for the end of occupation that "reorientation of the German education system" be brought about "to remove the present emphasis on the scientific and technological subjects especially applicable to the development of instruments of war, including aircraft."

Consideration must be given to policy for control of technical education in Germany beyond proscribed military and aircraft courses, such as physics, chemistry, higher mathematics, and courses in advanced engineering. Direct prohibitions would probably not find public support in Allied countries and could lead to clandestine evasion within Germany.

However, an anticipated combination of circumstances will offer an opportunity for other measures. There will be a decrease in the total funds available for research. Since capital will be lacking and

the importing of foreign equipment will be subject to prohibitive regulation, a natural tendency of German manufacturers will be to use existing machinery and processes. With the break-up of internal cartels a period of adjustment will be necessary while details of the administration of smaller business units are worked out.

Under the new conditions, research on new projects will tend to be a less urgent problem for management than equipment, sources of supply of raw materials, and markets for products. The rebuilding of war damage and the initiation of industrial reconversion will be likely to absorb most of the professional engineers sooner than pure scientists and research workers.

If, as a result of these conditions, scientific fields and the engineering professions are overcrowded in the initial postwar period, a drop in the enrollment of technical schools may be expected. Any movement among the technical groups suffering from unemployment to reduce the numbers entering the profession by raising educational prerequisites, eliminating certain schools, and other means might be encouraged by the control authorities as being preferable to the initiation of direct measures for a similar purpose.

The Nazis consolidated all professional engineers in a single organization chiefly drawn from the membership of the forty-odd engineering societies in Germany. Recently discovered material on the NS-Bund Deutscher Technik (NSBDT) (National Socialist Technical League) established in May 1934 shows that about 120,000 individuals were listed. It was subdivided into five groups—Mechanische Technik (mechanical engineering); Elektrotechnik, Gas und Wasser (electrical engineering, gas, and water), Chemie (chemistry); Hüttenwesen und Bergbau (metallurgy and mining); Bauwesen (building industry). The membership had a high percentage of engineers of university and college grade. The number probably is greater than similarly trained technicians in all of the rest of continental Europe.

Through subsidy of technical education, the business groups and the state had built up a large pool of trained personnel which was of great value during the rearmament period from 1933 to 1938. It is doubtful whether the encouragement of technical education by the business groups and the state was based entirely upon a long-term plan for stock piling this human asset for war. There were direct benefits in having overcrowding in the technical fields in the lower-salary standards which resulted. Cheap research was possible upon great varieties of projects not directly related to immediate production problems. In the chemical field a constant flow of new products gave German manufacturers a strong position in world markets. The great volume of research based on numbers of trained personnel rather than superiority of creative ability lay back of the excellent German reputation in scientific and technical fields. In view of the tremendous contribution which research made to the building up of the German war machine, the question of limiting German technical education should be reconsidered periodically during the entire period of Allied occupation with relation to other control problems. The creation of a large surplus of technical manpower through Government subsidy should be considered an unhealthy symptom.

Reeducation of the Germans toward democratic ideas will be an element of the problems of technical education. The introduction of additional courses in the political and social sciences into the curriculum of German engineering and scientific schools, and the liberali-

zation of the content, would have a salutary effect upon future graduates who will, as in the past, continue to be an influential section of the population structure.

About 90 percent of the students in German universities were drawn from the upper classes; 10 percent from the families of workers, minor officials, and small and medium landowners. Steps to increase this latter figure could be taken by the control commission to broaden the social base, particularly in technical, higher education.

A program for encouraging technical education in European countries other than Germany deserves attention at this time. It will not be possible to decrease dependence upon Germany of the rest of Europe by relocation of industry if additional technical personnel is not available in those areas. More good technical schools throughout Europe would reduce Germany's position as a great center for technical training. In the past many foreign students have absorbed pan-German ideas and later when they returned to their own countries served as contacts for technical intelligence. The program will not be successful without generous Allied help in the form of funds, equipment, and teachers.

Migration and foreign travel of German scientists and engineers.— Following World War I many technically trained Germans migrated abroad and were able to establish themselves in important industrial positions throughout the world. The favorable results to Germany were multifold. Armament production, forbidden by the Versailles treaty, was carried on in foreign countries and the techniques preserved until these activities could be transferred back to Germany. Centers for trade and foreign penetration were established. Cartel arrangements were facilitated. It is true that the individuals made valuable contributions to the economic life of the countries where they settled, but there was a pronounced tendency for them to maintain connections with and loyalties to Germany. In the 1930's some of them were vocal as German apologists and attached themselves to groups fostering isolationism and appeasement sentiments. The effects on public opinion materially delayed effective action being taken against the German menace until it was too late to prevent the war.

It is strongly urged here and specifically recommended by both the OSRD and the ad hoc committee of the Army and Navy in their reports that German scientists be kept in Germany for the most part in the postwar period and that travel control and surveillance of their activities abroad be part of the over-all plan. Pressure from business groups wishing to obtain the services of German specialists may be expected and the technical branches of the armed forces will quite legitimately desire to obtain first-hand knowledge of recent German military developments. There are at this writing German groups in the United States continuing experimental work for the United States Army upon projects which were started in Germany during the war. It is planned to keep these groups under strict Army control, and promptly return them to Germany when their usefulness is finished.

Arrangements should also be worked out for the repatriation of German scientists who have worked freely on military problems for the Axis cause in occupied or neutral countries during the war. Migration of German scientists and technicians for private employment in the United States should be discouraged, and, if permitted, be limited to the small number who can establish anti-Nazi antecedents.

Cooperation between the occupying powers is essential to carrying out the foregoing. Independent action by one Allied power in encouraging movement of German scientists to its territory will lead to competition between all Allied powers for key personnel. This is highly undesirable. Freezing of scientific personnel in the several zones would seem to be a necessary temporary measure until quadripartite agreement is reached upon this point.

5. INTERNATIONAL AGREEMENTS

To implement the recommended program international agreements should be entered into to cover—

(*a*) Data to be supplied by German Government.

(*b*) Action against German Government or individuals in event of violation of regulations affecting research.

(*c*) German patents abroad.

(*d*) German research activities outside Germany and in Germany for foreign account.

(*e*) Movement abroad of German scientific personnel.

(*f*) Air travel over Germany.

(*a*) *Discussion*

The time of greatest danger of German rearmament will be in the latter part of the control period when the means for effectively administering controls will be the weakest. Early agreement among the Allied powers and neutrals upon the foregoing and other points of future friction is necessary to prevent a vacillating policy toward Germany. Germany is again capable of the same "broken field running" which proved successful in circumventing the restrictions of the Versailles Treaty.

6. ADMINISTRATION

It is recommended that—

(*a*) Regulations affecting research be administered in a separate division of the Control Council to be newly created and furnished with adequate personnel to carry out the program finally adopted.

(*b*) Penalties for violation of control measures be provided, related to those used to enforce industrial regulations.

(*c*) During the postoccupation period, border control measures should be used to enforce any regulations affecting research which have been retained in the treaty with the German Government.

(*a*) *Discussion*

To be effective, control machinery must cut across as many segments of German economic life as were formerly touched by German scientific research and development. The administration should be related to other industrial and trade controls; and emphasis should be placed on measures which will neutralize the strength of research as an institutional tool of the war party rather than solely on those measures which seek to suppress a particular product having war potential.

As indicated, a new and separate division of the Allied Control Council or its successor organization will be desirable. This division might have the following administrative sections:

i. Regulations—to frame and publicize control measures.

ii. Liaison—to coordinate activities with other divisions of the Control Council, possibly through committees on an interzonal basis. These committees could be organized either by industries or by activities, such as production limitation, products control, or materials control.

iii. Enforcement and intelligence—coordinated with similar functions of other divisions.

iv. Board of review—to hear cases of violation of regulations.

v. Service—to handle the issuance of permits and licenses and problems arising out of the routine administration of controls.

The subject matter to be considered by the above sections would fall in the following categories:

i. Facilities—concerned with the destruction or removal of laboratories or testing installations; construction of new facilities and the licensing of new facilities; and the licensing of permitted laboratories, testing installations, pilot plants, and field trial equipment.

ii. Project control—definition of permitted fields of research and limitation upon use of certain facilities; licensing of new projects, products, or testing of these items.

iii. Financial backing of activities—scrutiny of the disbursement of governmental and private funds for research.

iv. Personnel—control of education, licensing of scientists and technicians, and regulation of their movement both within and outside Germany.

v. Administrative problems—feasibility of controls and their relation to long-term objectives of industrial disarmament.

E. Feasibility of Scientific Disarmament

The feasibility of any plan for the scientific disarmament of Germany will depend greatly upon success of the entire program for military and industrial disarmament.

None of the recommendations can be administered without adequate numbers of technically trained Allied personnel. This is necessary in the initial period of occupation when a large force will be required to survey laboratories, facilities, and scientific personnel. Project control will, in the early stages, entail extensive study of all phases of German economic life in the preparation of regulations setting forth permitted and prohibited fields of research.

It is not expected that all dangerous research can be supervised by the recommended measures. Not only can a scientist's thoughts remain unknown, but small scale "parlor research" can be carried on even with a most careful check upon distribution of scientific equipment and materials. However, general supervision of the great bulk of German research will be possible through registration, licensing, and survey of financial backing. The plant inspection branch of the industrial section of the Allied administration will have available personnel and opportunity to uncover pilot plant and testing installations as well as laboratory research. Reliance will have to be placed upon intelligence gathered by undercover groups. Surveillance of scientists, known to be experts in war products, may disclose resumption of such activities. The observations of visiting foreign scientists and businessmen will furnish control authorities with information as

to new developments in German scientific circles. As long as the occupation continues, it will be difficult for the Germans to conceal important projects for more than a short time.

1. POST-OCCUPATION PERIOD

The post-occupation period, when the bulk of administrative activities are turned over to the German authorities, will be the time when the efficacy of the program will receive its first severe test. Two main problems will be found. It will be increasingly difficult to gather information upon what the Germans are doing. It will also be impractical to rely solely upon the German Government to impose penalties for violation of those control measures which are retained. The positive means for continuance of the program must include (i) formal military and economic sanctions, (ii) financial and trade pressures upon the German Government, and (iii) a system of internal controls in Germany maintained through powers retained by the Allied Control Administration or a successor body pursuant to ultimate settlement by treaty or international agreement.

The pattern of the two World Wars shows that the Germans will again seek world domination unless new educational factors (and reorientation of the economy) to peaceful pursuits are successfully introduced. This will take time. Elementary prudence dictates that the spring sources of German industrial and military strength in pure science and applied science must not remain unchanneled.

Continuous testing of equipment and proving of weapons precedes the widespread manufacturing operations necessary to equip a large modern army. Both phases are difficult to conceal and hence subject to control. However, the suppressing at the laboratory stage of not only military research but also civilian products which have potential military use will break the continuity of military "know-how" and tend to slow down future German rearmament. This is in keeping with Allied policy under the Berlin Protocol.

SECTION IV. AN INSTITUTIONAL DISARMAMENT PROGRAM: THE ELIMINATION OR CONTROL OF GERMAN INSTITUTIONS USED IN THE ORGANIZATION AND DIRECTION OF ECONOMIC RESOURCES FOR WAR

CONTENTS

	Page
A. Introduction	193
B. Military institutions	194
1. The General Staff and Officer Corps	194
2. Military and related agencies	196
C. Economic institutions	198
1. Governmental institutions	198
2. Private and semi-public institutions	200
(a) Domestic cartels, trusts, and combines	201
(b) International cartels	207
Recommendations for immediate action	212
Recommendations for diplomatic action	212
(c) Landed estates	213
D. Denazification	214
E. Other institutions	214
Bibliography	216

SECTION IV

AN INSTITUTIONAL DISARMAMENT PROGRAM: THE ELIMINATION OR CONTROL OF GERMAN INSTITUTIONS USED IN THE ORGANIZATION AND DIRECTION OF ECONOMIC RESOURCES FOR WAR

A. INTRODUCTION

To permit the retention of the institutional machinery which has served the purpose of organizing, preparing, and directing the German economy for war would be extremely dangerous. One of the first steps in disarmament should be consideration of the role played by various institutions, governmental and private, in shaping the German economy for war.

In total warfare, especially as developed in Germany, every institution, private as well as public, is mobilized and aids in the prosecution of the war. Certain agencies, however, such as those in charge of armaments and the mobilization of the armed forces, owe their existence to war. There will be little question that these should be abolished at once and their return prohibited. Others, originally established to perform other functions, have been so closely linked with German plans for aggression and have so actively assisted in economic mobilization that they, too, must be eliminated or controlled. (See sec. I D.)

The negation of existing institutional arrangements will not guarantee a peaceful and peace-loving Germany. Real long-term disarmament can be achieved only by the development of institutions with a strong bias for peace, which would involve carrying out a positive program designed to fill the vacuum left after the destruction of the present institutions.

The FEA program presented in this section is of a narrower scope and more limited objective; it outlines those measures of elimination and removal, that is, institutional disarmament, which must be taken in order to make room for the emergence of a new political, economic, and social structure in Germany.

Ideally, the Germans themselves should assume the initiative and responsibility for working out the nature of the future German society, so long as it meets the basic requirements laid down by the Allies. An army of occupation is probably not the most appropriate instrumentality to carry out a positive program for the reorganization of German economic institutions. However, the measures taken during occupation must inevitably influence the kind of German society which will emerge. It is, therefore, important that careful thought be given to the kind of Germany the United States would like to see emerge. While the recommendations made here are of a negative character, it is believed that, if executed, they will provide an environment in which disarmament can be effectuated and maintained.

81776—46——14

B. Military Institutions

1. THE GENERAL STAFF AND OFFICER CORPS

The General Staff has not only been responsible for the planning and execution of German military conquest but has been a symbol and rallying power for German militarism. The uprooting of the General Staff as an institution, the dissipation of the traditional halo surrounding it, and the meting out of stern justice to its leaders will go a long way toward removing the social prestige attached to Prussian militarism and will strengthen immeasurably the will of decent men and women in Germany to achieve a democratic and peaceful Germany.

The German General Staff had its beginnings in the Prussian General Staff instituted by Scharnhorst, Gneisenau, and Clausewitz in the beginning of the nineteenth century. Though it was assigned the responsibility for the planning of military campaigns and operations, and, in fact, became known as the "brains of the army," it attained its full status only under Moltke's leadership. Under Moltke, and because of the victories of 1864, 1866, and 1871, the General Staff, then called the Great General Staff (Grosser Generalstab), gained a virtually unassailable position in German life. Its position has been little challenged since.

An important constitutional factor contributed to this development. In order to bolster the rule of reactionary Junker forces, the General Staff and the personnel office of the Army were withdrawn from the control of the War Minister, and the Chief of Staff became the direct military adviser of the Emperor, who alone was his superior. Divergences and rivalries between the political leadership and the General Staff were frequent, but the General Staff appeared always to prevail. The invasion plans for the First World War, for example, were worked out by the General Staff which overcame the resistance of the weak Reich Government against violating Belgian neutrality. In the later course of the war the General Staff (Ludendorff) actually dominated the political as well as the military scene.

The dominant role of the staff officer and his social prestige made membership in the General Staff a coveted aim of every ambitious German officer. Admission was determined by high and rigid standards, which, in line with the tradition of Clausewitz and Moltke, placed great emphasis upon intellectual training and excellence. Preference was given to the Junkers and their descendants.

The Treaty of Versailles provided for the disbandment of the General Staff. While the institution as such officially disappeared, the military and political influence of former staff members continued under the Weimar Republic. The Reichswehr as a whole, as it was created after 1919, was more or less the work of the General Staff. Its first head, Von Seeckt, was a former General Staff member, and key posts were filled by former staff members. It is, in fact, established that a secret General Staff was perpetuated within the Army command (Heeresleitung).

Although the official doctrine during the Weimar period was that the Army bowed to the decisions of civilian political leaders, Army officers in high positions continuously worked for the restoration of Germany's military power and of a political system which would be willing to carry out this objective. The Reichswehr followed its own

political lines and secretly obstructed the international and domestic policy of the Reich Government. Representatives of these tendencies found a receptive ear in old Reich President Von Hindenburg, a Junker, and himself a former General Staff member.

Although the General Staff members did not identify themselves with the Nazi Party, the high Army officers welcomed and supported the expansion of this nationalistic movement whose foreign policy they fully approved. Their stubborn opposition to the democratic and pacifist forces of the Republic was instrumental in Hitler's advent to power.

In the Third Reich a new Army organization was set up which now included not one but two different general staffs. The over-all organization, the high command of the armed forces (Oberkommando der Wehrmacht), was composed of three elements, namely, the high commands of the Army, Navy, and Air Force. The high command of the armed forces had its own general staff, the Wehrmachtführungsstab, for the over-all planning of military operations. The command of the Army also had its own general staff, actually the successor of the old General Staff. The Wehrmachtführungsstab consisted chiefly of officers with a less aristocratic background and with narrower and more technical interests. This staff included the new elite—those who were identified with the Nazis. In contrast to the old General Staff, both staffs were subordinated to their respective high commands. There was competition between the two staffs, but the influence of the Staff of the Army, in which traditional strategic planning was carried on, declined after the dismissal of Brauchitsch.

The failure of the measures adopted after the last war to eliminate the General Staff is traceable to an emphasis on removal of the institution to the neglect of the individual members and the professional officer corps. A similar danger exists now. Even without a German Army, former high officers will probably try to maintain contact with each other and to establish secret organizations, in which the program of the former General Staff will be perpetuated. Moreover, members of the General Staff and high Army officers generally, if allowed to enter into civilian professions with an opportunity to influence economic and intellectual life, will in all likelihood try to perpetuate the military-imperialistic traditions, which now represent a strange mixture of the old semifeudal attitudes and Nazi ideology.

A complete and formal dissolution of the German General Staff is essential if it is not to serve again as a rallying point in a resurgence of organized German strength. Since its formal dissolution after the last war was evaded through clandestine operations, it is submitted that the only sure method of achieving this end is to segregate its members from the civilian population of Germany. It would be so difficult to prevent clandestine operations if members of the group enjoyed ordinary civil liberties that one comes reluctantly to the conclusion that these men as a group must be deprived of the liberties some of them would be certain to abuse.

It is proposed that the German General Staff be abolished as an institution and its reestablishment prohibited. Its members should be completely removed from German society. A minimum check against their reemergence or continuation as a dominant social group in Germany would be their exile. They should be stripped of their titles, rank, and status, because to accord them the dignity of military

officers would perpetuate their status and prestige at home and abroad. In order to destroy the cohesiveness of the group, internees should not be permitted to maintain contact with each other.

In addition, the German professional officer corps, which is by tradition, environment, and education devoted to nationalistic and militaristic ideals, must be promptly eliminated, and the Allied authorities should take measures directed toward—

(*a*) Destroying the elite status of the officer corps.

(*b*) Making communications impossible among high ranking officers—destroying their group unity and cohesiveness.

(*c*) Prohibiting participation of high ranking officers in scientific or industrial research.

(*d*) Prohibiting financial relations between heavy industry and high ranking officers.

(*e*) Eliminating the Junker class by breaking up their landed estates and by rigid enforcement of prohibitions against any kind of Government subsidies or financial assistance to this class which constitutes the traditional social group of the military caste.

It is not the intent of FEA to prejudge the innocence or guilt of the German General Staff or its individual members of war crimes as they may be defined or determined by the War Crimes Commission. The Staff or its members may be found guilty of war crimes but that is not the question to be settled here. The FEA proposal is based upon disarmament considerations rather than upon any theory of criminal action in the past. The segregation proposed is a preventive, rather than punitive, measure. Hence, the methods to be used should not be those normally employed in the punishment of criminals. Rather, the internment should be in the nature of that employed by a civilized society for the segregation of enemy aliens, prisoners of war, or mentally diseased persons.

It is recognized that many, if not most, of the members of the General Staff and the high ranking officers will, in fact, be held as war criminals and disposed of according to the findings of the War Crimes Commission. However, to insure the elimination of the institution and the permanent prevention of its reemergence, the measures proposed here should be applied to all high ranking officers and staff members who might be returned to civilian life.

2. MILITARY AND RELATED AGENCIES

Military and paramilitary organizations as listed below should be abolished, and the armed forces demobilized by Allied authorities. German authorities should not be entrusted with responsibility for demobilization. Some of the agencies to be eliminated have performed functions which should be transferred to other agencies. It is recommended, for example, that the function of assistance to wounded veterans and their dependents—now performed by the Wehrmachtsfürsorge- und Versorgungsämter, attached to military high commands—in the event that any special provision is made for them, should be transferred to the Ministry of Labor and handled together with other pension and insurance activities. In all instances the Allied authorities should make a thorough check of the files and records of the agencies to be eliminated.

(*a*) High command of the armed forces (Oberkommando der Wehrmacht) with the general armed forces directorate (Allgemeines Wehrmachtsamt), the operational directorate (Wehrmachtführungsstab), NS directorate (NS Führungsstab im OKW), the latter concerned with Nazi indoctrination, and with all the other subdivisions.

(*b*) High Command of the Army (Oberkommando des Heeres) with Army General Staff (Generalstab des Heeres), Army Personnel Directorate (Heerespersonalamt), Chief of Equipment and Commander of the Reserve Army (Chef der Heeresrüstung und Befehlshaber des Ersatzheeres), with the other subdivisions and all subordinated agencies and formations.

(*c*) High Command of the Navy (Oberkommando der Kriegsmarin) with subdivisions and with all subordinated agencies and formations.

(*d*) Reich Air Ministry and High Command of the Air Force (Reichsluftfahrtministerium und Oberkommando der Luftwaffe) with subdivisions and with all subordinated agencies and formations dealing with military aviation.

(*e*) German Air Line (Deutsche Lufthansa A. G.), a public corporation under the jurisdiction of the Reich Air Ministry, with an exclusive monopoly of civil air transportation.

(*f*) Fifteen air offices (Luftämter), the regional offices of the Reich Air Ministry.

(*g*) Reich Institute for Air Raid Protection (Reichsanstalt für Luftschutz). This and the following three are subordinated to the Air Ministry.

(*h*) Reich League for Air Raid Protection (Reichsluftschutzbund).

(*i*) Reich Association of German Aircraft Industry (Reichsverband der Deutschen Luftfahrtindustrie).

(*j*) German Aircraft Committee (Deutscher Luftfahrtzeugausschuss).

(*k*) Reich Youth Leader (Jugendführer des Deutschen Reichs), supreme Reich authority in charge of nazification and training of the entire youth of Germany.

(*l*) Reich Labor Leader of the Labor Service (Reichsarbeitsführer des Arbeitsdienstes), in charge of the compulsory labor service, which carried on the semimilitary training and indoctrination of youth, in conjunction with the regional offices of the Labor Service for Boys and the district offices of the Labor Service for Girls (Arbeitsgauleitungen des Arbeitsdienstes für die männliche Jugend; Bezirksleitungen des Arbeitsdienstes für die weibliche Jugend).

(*m*) Section I. R. V.: (Defense of the Reich—Reichsverteidigung) and I R W: (Military Law and Policy—Wehrrecht und Wehrpolitik) of division I R and division VIII: Sports and Physical Exercises (Sport und Leibesübungen).

(*n*) Reich Sports Office (Reichssportamt) under Minister of Interior.

(*o*) Reich Academy for Physical Exercise (Reichsakademie für Leibesübungen) under the jurisdiction of the Minister of Interior.

(*p*) Division IX of the Reich Ministry for Food and Agriculture: (Rearmament of the Village—Aufrüstung des Dorfes).

(*q*) Central Office for Draft Records (Zentralstelle für das Erfassungswesen) under the Ministry of the Interior. This office was responsible for establishing complete lists of the male population in certain age groups for draft purposes.

C. Economic Institutions

The complete disarmament of Germany requires the abolition of the public agencies, ministries, and organizations—such as the Speer Ministry (Reich Ministry for Armaments and War Production)—which either were instituted for the express purpose of preparing the German economy for war or directing it during the war, or which assumed such functions irrespective of their original purpose. It also requires the elimination of those private economic organizations—cartels, combines, and trusts—by which the plans and preparations for German aggression were furthered.

1. GOVERNMENTAL INSTITUTIONS [1]

Listed below are a number of agencies, all of which fall within the category of "agencies whose practice or purpose is to plan, design, manufacture, acquire, or operate any implement of war," which were recommended for elimination by the War-Navy Committee.[2]

These agencies should be eliminated as entities. Some of them, however, are responsible for functions which will have to be continued in the interest of Allied control of the German economy, as, for example, the functions of the Reich Commissioner for Price Formation, in the Office of the Delegate for the Four Year Plan. Since price control will be indispensable during the early period of occupation, the functions could be transferred to the Ministry of Economics. Generally, it is recommended that essential central functions which have been performed by agencies to be eliminated should be transferred to the traditional central ministries and regional and local functions to the traditional regional and local authorities, such as state ministries, provincial governors, district governments, county chiefs, and municipalities.

The list is restricted to public or semipublic agencies which have performed direct war functions. Other German agencies which have served indirectly in preparing the German economy for war should also be considered for elimination. The Reich Office for Foreign Trade (Reichstelle für den Aussenhandel), for instance, which was an instrument of the vicious foreign trade policy of the Nazi regime, should be eliminated, and German exports and imports placed under direct Allied control. In order to simplify administration, do away with overlapping and duplication, and facilitate Allied control, it may also prove advisable to eliminate certain other agencies. Decisions in regard to the elimination of such agencies can be made only by the authorities in the field after they have had some experience with the problems of control. Essential functions performed by such agencies

[1] The problem of the changes that should be effected in the German governmental machinery is treated more completely in TIDC project No. 28.

[2] TIDC project No. 1.

should be transferred to traditional central and local authorities as suggested above.

In addition, a great many other German agencies not listed, which should be retained, will have to be closely controlled, as, for example, the Ministries of Economics and Finance. Both perform highly strategic functions and should be subject to strict Allied control.

Other agencies for civilian administration omitted from the list will require basic changes. An outstanding example is the Civil Service.[3] In order to undermine the concept of strict hierarchical responsibility, which is associated with the Prussian tradition and with militaristic attitudes, the German Civil Service should be fundamentally changed, particularly in respect to recruitment, preparatory education, and promotions. These changes should be accomplished in such a way as to leave an effective and efficient organization.

The agencies to be eliminated and prohibited from returning in the same or like functions even though under another name are—

(*a*) Ministerial Council for the Defense of the Reich (Ministerrat für die Reichsverteidigung).

(*b*) Reich Defense Commissioners (Reichsverteidigungskommissare), regional agents of the Ministerial Council; the positions have been held by the Gauleiter.

(*c*) Commissioner General for Total War (Generalbevollmächtigter für den Totalen Kriegseinsatz); Goebbels was appointed to this position in July 1944.

(*d*) Reich Office for Land Planning (Reichsstelle für Raumordnung) with the Planning Association (Gesellschaft zur Vorbereitung der Reichsplanung und Raumordnung), Regional Planning Committees (Landesplanungsgemeinschaften), and Planning Offices (Planungsbehörden).

(*e*) Reich Ministry for Armaments and War Production (Reichsministerium für Rustung und Kriegsproduktion) with all its bureaus and offices, including the important Planning Office (Planungsamt) and Bureau Bau-Organisation Todt, with the whole Organisation Todt.

(*f*) The following corporations controlled by the Speer Ministry:

(1) Rüstungskontor G. m. b. H.
(2) Betriebsmittel G. m. b. H.
(3) Generalorkraft A. G.
(4) Festkraftstoff A. G.
(5) Heeresrüstungskredit A. G.
(6) Erdölanlage G. m. b. H.
(7) Rohstoffhandelsgesellschaft G. m. b. H.

(*g*) Reich Labor Efficiency Engineer (Reichsarbeitseinsatzingenieur), District Labor Efficiency Engineers (Bezirksarbeitseinsatzingenieure) and Labor Efficiency Engineers (Arbeitseinsatzingenieure), under the jurisdiction of the Speer Ministry.

(*h*) Armaments Boards (Rüstungskommissionen), regional agencies of the Speer Ministry.

(*i*) Armament Inspectors (Rüstungsinspektionen), regional field officers of the Speer Ministry.

(*j*) Armament Commissioner (Rüstungsobmann).

[3] For a discussion of this question see TIDC project No. 28.

(*k*) The Army District Deputies (Wehrkreisbeauftragte), also had economic functions under Speer Ministry.

(*l*) District Power Office (Bezirksenergiestelle), under the jurisdiction of the Speer Ministry.

(*m*) Operating Building Commissioner (Einsatzgruppenleiter) and Einsatzleiter under the jurisdiction of the Speer Ministry.

(*n*) Gau Economic Chambers (Gauwirtschaftskammern), under joint jurisdiction of the Speer Ministry and the Reich Ministry of Economics.

(*o*) Main Committees, Rings, and Production Main Committees (Hauptausschüsse, Ringe und Produktionshauptausschüsse), organizations working in particular fields of war production, under the supervision of the Speer Ministry.

(*p*) Commissioner General for the Regulation of the Building Economy (Generalbevollmächtigter für die Regelung der Bauwirtschaft) (Speer).

(*q*) Inspector General for Water and Power (Generalinspektor für Wasser und Energie) (Speer).

(*r*) Inspector General for Highways (Generalinspektor für das deutsche Strassenwesen) (Speer).

(*s*) Office of the Delegate for the Four Year Plan (Beauftragter für den Vierjahresplan) with all divisions and special Delegates, particularly the Central Planning Board (Zentrale Planung) and the Commissioner General for Labor Mobilization (Generalbevollmächtigter für den Arbeitseinsatz.)

(*t*) Organization of Industry and Trade (Organisation der gewerblichen Wirtschaft), consisting of the following groups:

(1) Reich Groups (Reichsgruppen)

(2) Economic Groups (Wirtschaftsgruppen) or (Bewirtschaftungsstellen) with District Groups (Bezirksgruppen).

(3) Trade Groups (Fachgruppen)

(4) Trade Subgroups (Fachuntergruppen).

(*u*) Reich Boards (Reichsstellen), agencies organized along functional lines, according to the materials with which they are concerned; under joint jurisdiction of Ministry of Economics and Speer Ministry.

(*v*) Reich Associations (Reichsvereinigungen) and Gemeinschaften, Organizations of business firms in special fields, fulfilling the functions of Wirtschaftsgruppen, cartels, and Hauptausschüsse or Ringe, respectively. In some cases the Reichsvereinigung is at the same time the Reichsstelle.

(*w*) Reich Commissioner for Ocean Shipping (Reichskommissar für Seeschiffahrt).

(*x*) Inspector General for Motor Transport (Generalinspektor für Kraftfahrwesen).

2. PRIVATE AND SEMIPUBLIC INSTITUTIONS

In Germany there has existed, side by side with the official General Staff, an unofficial—but perhaps even more powerful and dangerous—economic general staff in the leaders of the domestic and international cartels, combines, and trusts, who also controlled the powerful pressure groups of industry such as the Reichsverband der deutschen Industrie. Under this limited number of men was developed a highly integrated

economy in which transactions between the military General Staff and the producers of the implements of war were readily arranged.

During the Nazi regime the lines between Government, party, and business became blurred until there was a virtual fusion of governmental and business structures. Industry was endowed with governmental authority, and became a kind of state within a state. This gave the leaders of business, representing the great combines and cartels, tremendous power over the German economy and permitted monopolistic elements to consolidate and legitimize their position.

It is essential that this relationship between Government and industry should be dissolved and that the exercise of rights and powers which are fundamentally governmental should be confined to bona fide agencies of the Government.

(a) Domestic cartels, trusts, and combines

Even with the dissolution of the General Staff and effective disposition of the officer corps, the demobilization of the Army, the outlawing of the Nazi Party and its affiliated organizations, and the prohibition of armament production, danger of German aggression will not be eradicated. The danger is real until the economic and financial groups which have been the driving forces behind the policy of expansion through military conquest are stripped of their power, and their instruments of power—cartels and combines—destroyed. Regardless of their rationalizations, the clearly proven fact is that the leaders of German cartels and combines fostered the use of arms in an attempt to develop and maintain a position of world industrial domination.

Under the Empire, the heads of the Government, the leading industrialists and members of the General Staff belonged to the same social class; they had the same interests. The State favored concentrations of economic power, because such concentrations facilitated cooperation between the Government and industry in the achievement of a common goal. From the very beginning of Germany's industrial development after the Franco-Prussian War, competition was viewed as something anarchical and, therefore, undesirable. Tolerance of combinations in restraint of trade was also due to the fact that the various German states were engaged in the business of producing and distributing certain commodities. One of the earliest German cartels, the potash syndicate, was formed by the states of Prussia and Anhalt and two private enterprises, and one of the agencies promoting the formation of the Rhenish-Westphalian coal syndicate was the Bergwerksgesellschaft Hibernia, a coal-mining enterprise owned by the state of Prussia.

Until 1923 there were no legal limitations on the organization of cartels and other combinations in restraint of trade. The courts held that cartel agreements constituted a legal exercise of the freedom of contract, subject to the normal limitation as to "good morals or injury of a third party by a violation of good morals." No cartel agreement was declared invalid on these grounds. Similarly, no action was taken by the Government to prevent the development of powerful monopolistic organizations.

During World War I, it was not necessary for the Government to bring about drastic changes in the organizational structure of the principal German industries; the existing agencies of control were easily converted to the purposes of a war economy. No special decrees had to be issued to centralize authority and to coordinate the

work of the economic staff with that of the General Staff except in the field of consumer goods in which cartelization had not taken root.

After World War I, though Germany experienced a political revolution in the overthrow of the Kaiser and the adoption of the Weimar Constitution, the General Staff and the same industrial and financial oligarchy that had prepared Germany for the war retained their power.

The Treaty of Versailles did little to reduce Germany's industrial capacity to prepare for war; it limited or prohibited production only of strictly military goods. Though much of its equipment was obsolescent and inefficient, Germany's heavy industry, unlike that of countries ravaged by the war, was able to begin operation at once, producing for reparation and for other exports. Powerfully organized, some of the industrialists used the inflation and the period of economic chaos from 1918 to 1924 to secure advantages for themselves within Germany and to obtain concessions from the Allies. Lacking an economic disarmament policy and anxious to stabilize economic conditions, the Allies eventually fell in with their plans. The French withdrew from the Ruhr; reparation was materially scaled down under the Dawes plan; German currency was stabilized with the help of a large foreign loan; and the international financial markets, especially the New York market, provided German trusts and combines with funds for the modernization and expansion—Rationalisierung—of plant and equipment. During this period large fortunes had been made and powerful combines and trusts created. These groups, including but not limited to the iron and steel, coal, chemical, and electrical industries and hereafter designated as the war industries, wielded decisive influence throughout the life of the Weimar Republic and enlarged their power in Hitler's Third Reich.

The explanation for the continuing power of war industry lay in a combination of circumstances, of which the following were most important:

(1) Industry was organized both horizontally and vertically. While cartels were by their nature horizontal organizations, combines and trusts represented both types or a mixture of both. The vertical combines enabled the basic industries to control business on various levels of production.

(2) Germany as a whole was split politically into a number of groups which showed no ability to cooperate: Social Democrats, Communists, National Socialists, Bavarian Catholics, and Nationalists. Labor was similarly split into Socialists, Communists, National Socialists, and Christian Socialists. War industry, however, presented a united political front toward labor and the Government. Through the Reichsverband der deutschen Industrie it controlled the nationalist parties in the Reich. A majority of the German newspapers and a major part of the moving picture industry were dominated by Alfred Hugenberg, the spokesman of German war industry and the chairman of the German Nationalist Party.

(3) The Weimar Republic proved unable or unwilling to exercise effective control over heavy industry while the latter proceeded to organize German economic life under its domination in preparation for war.

(4) War industry appeared to important financial groups abroad as the only force that kept Germany from falling apart, and New York, London, and Paris, especially New York, loaned it billions of dollars to make it stronger.

(5) Payment of reparation made it necessary for Germany to develop a large export trade. That could be done only by industrial groups, important to the war machine, and they were able to dictate to the Government the conditions under which they could most effectively perform this "patriotic" duty.

(6) Representatives of war industry became the interpreters of Germany's foreign policy and of German public opinion. Dr. Schacht, representing German banking, Fritz Thyssen, speaking for German heavy industry, and Max Ilgner, of the I. G. Farben, toured the United States, damning the Treaty of Versailles, pointing out the dangers of Bolshevism and threatening that Germany would go either Communist or Nazi unless freed from the burden of reparation and permitted to develop an export trade consistent with its economic power and the cultural level of its people. After Germany was freed from reparation, they helped put the Nazis in power.

Thus, before the Nazis became a dominant political force in the Reich, German war industry was in fact more powerful than the Government.

The Nazis became politically powerful especially during the period of mass unemployment of labor from 1930 to 1933. This, however, was also a period of mass unemployment of capital, especially in the heavy industry of the Ruhr. Faced with bankruptcy, the leaders of heavy industry sought a way out and found it in Hitler. They felt as strongly as he that compulsory disarmament was a national disgrace. They shared fully Hitler's desire to create a powerful military machine for the purpose of enabling Germany to speak on equal terms with its armed neighbors. Many businessmen, particularly in industries important to war, were not only nationalistic but also saw in rearmament financial salvation of their idle enterprises. There is ample evidence that they helped to put the Nazis in power.

Under Hitler, as much as under Bismarck, Kaiser Wilhelm II, and the Weimar Republic, the center of power in Germany was organized business—combines, trusts, and cartels, particularly in the industries important for war.

The Nazis were allegedly committed to carry out drastic changes in the relations between the state, industry, and labor. These changes were real enough in the case of labor; labor was deprived of the right to strike and was placed under the leadership of the Nazi Party. Workers' trade-unions (Gewerkschaften) were disbanded and a single labor front, comprised of employers as well as employees, created. While labor was refused the right to form organizations of its own, the organization of business into pressure groups continued and was sanctioned by legislation.

For purposes of propaganda, the Nazi Government created an impression that it was determined to reorganize and uproot the organization of business. Under the law of February 27, 1934, the Minister of Economic Affairs was given broad powers to establish a comprehensive organization of industry and trade that could best

carry out the policies of the National-Socialist state. However, the Minister who received these broad powers was Dr. Hjalmar Schacht, an outstanding exponent of big business.

Using his powers, Dr. Schacht organized the entire business of the country in the estate of industry and trade, consisting of six national groups (Reichsgruppen): (1) industry, (2) handicrafts, (3) trade, (4) banking, (5) insurance, and (6) power. The largest national group was that of industry, which was virtually the successor of the Reichsverband der deutschen Industrie. It was divided into seven main groups (Hauptgruppen) which were again subdivided into economic groups (Wirtschaftsgruppen). The other national groups were subdivided also into economic groups, which were organized by regions and districts.

The organizations of industry and trade originally were prohibited from engaging in any activities designed to control production, prices, market territories, or conditions of transacting business. These functions were reserved for the cartels, which covered all domestically produced raw materials, all semifinished goods, and at least one-half of the production of finished goods before the war.

The Government subsequently entrusted the economic groups with the supervision of cartels and increasingly shifted jurisdiction over the market from cartels to the groups. Finally, when the economic groups had been virtually converted into cartels, the Government went through the motions of "dissolving" most of the old cartels.

The ostensible organizational reform did not change the pattern of power and control in German industry. The power remained in the hands of the big trusts and combines which have dominated the policies of the German cartels. The same group of men remained in the saddle, because the principal aim of the state—rearmament—was also the principal need of the big trusts and combines. There was no conflict between them and the Nazi state. The state and the leading industrialists became partners in the huge armaments industry.

During the war, as during the period of rearmament, the large combines and trusts constituted an ideal instrument for the operation of a war economy and for the penetration of the conquered territories. For example, through one single trust, the Vereinigte Stahlwerke, the Government and the General Staff could exert their influence over the entire field of German heavy industry. Before the war, 35 directors and managers of this trust participated in the management of 160 other industrial and financial enterprises in the coal, iron and steel, machinery, machine tools, explosives, chemicals, textiles, lime, cement, shipping, and trading industries. The following leading German industrialists and bankers were on the board of directors of the Vereinigte Stahlwerke in 1939:

Hermann Schmitz, chairman of the board of I. G. Farbenindustrie;

Carl Friedrich von Siemens, chairman of the board of Siemens und Halske;

Friedrich Flick, head of the Flick combine, including the Harpener Bergbau and Mitteldeutsche Stahlwerke;

Karl Kimmich, of the Deutsche Bank;

Will Koeppel, of the Berliner Handelsgesellschaft;

Karl Mockovitz, of the Dynamit A. G.;

Georg Talbot, of the Waggonfabrik Talbot.

Through Schmitz and von Siemens, the trust was represented on the board of directors of Friedrich Krupp A. G. At least one member of the board of the Vereinigte Stahlwerke was also a director of the Mannesmannroehrenwerke, Kloeckner, Hoesch, Daimler-Benz, Demag, Schering, Kali-Chemie, Salzdefurth, and the Goering Steel Works.

The Vereinigte Stahlwerke had been on the verge of bankruptcy. Its total turn-over declined from 1.5 billion reichsmarks in 1929 to 521,000,000 reichsmarks in 1932. Although it was known that Emil Kirdorf, of the Gelsenkirchener Bergwerke, one of the pillars of the steel trust and the spokesman of the heavy industry during the Empire, and Fritz Thyssen, one of the most powerful figures in the steel trust and one of the wealthiest industrialists and bankers in Germany, were exerting all their influence to throw the support of the trust to the Nazis, yet the Bruening government came to the support of the tottering combine by buying out its largest shareholder, Friedrich Flick, and paying 90 percent of par for his holdings, although their market price was 22 percent of par. Collapse of the trust was not in the interest of the German State regardless of the form of government prevailing in Berlin. The Reich Government not only saved Friedrich Flick's fortune but retained him on the board of directors of the trust.

Under the Nazis, both during the period of rearmament and during the war, the Vereinigte Stahlwerke worked hand in glove with the Government and the General Staff.

Even more useful in preparing Germany for war, because of its extensive international connections, was the I. G. Farbenindustrie. I. G. Farben's position within Germany was also a powerful one, as is indicated by the following table showing the proportion of total German output of certain products that was produced by I. G. Farben.

Product:	Percentage	Product—Continued	Percentage
Chemical nitrogen	70.0	Ether	50.0
Lithopone (for paints)	85.7	Brown coal	20.0
Synthetic camphor	60.0	Explosives	60.0
Synthetic methanol	100.0	Magnesium	100.0
Aspirin	60.0	Coal tar dyes	100.0

As the main producer of chemicals, I. G. Farben also exercised a major influence in the rayon cartel, although its production quota was only about 20 percent of the German total. Furthermore, I. G. Farben was one of the largest owners of coal deposits in Germany and one of the largest consumers of coal. Through the control of the Rheinische Stahlwerke, it was one of the principal figures in the steel trust.

The individual members of the board of managers of the I. G. Farben are the most powerful industrialists and bankers in Germany. Hermann Schmitz, chairman of the board of managing directors (Vorstand), was also director of the following corporations:

Dynamit, A. G.
I. G. Chemie, Basle.
General Aniline and Film, New York.
Vereinigte Stahlwerke.
Metallgesellschaft A. G.
Koeln-Rottweiler A. G.
Rheinische Stahlwerke A. G.
Wolff and Co., A. G.

A. Riebeckschc Montanwerke A. G.
Deutsche Reichsbahn Ges.
Reichs-Kredit-Gesellschaft.
Kalle & Co., A. G.
N. V. Internationale Bergin Compagnie voor Olien Kolenchemie, Haag.
Norsk Hydro Elektrisk Kvaelstoff A. S., Norway.
Deutsche Bank.

The brother of Hermann Schmitz was president of the American I. G. Chemical Co. The head of the I. G. Berlin office, Max Ilgner, was a nephew of Hermann Schmitz and brother of Rudolf Ilgner, vice president of Chemnyco, Inc., of New York. He conducted the company's political and propaganda activities throughout the world and acted also as the liaison between the company and the Nazi Party. He headed the company's political-economics department which carried on intensive studies of economic and political conditions in foreign countries, based on information obtained confidentially through the I. G. subsidiaries and cartel associates abroad, and worked closely with the General Staff.

The I. G. was the dominating influence in the chemical markets of Spain, Portugal, Sweden, Switzerland, Italy, and practically every Latin-American country.

Unlike many of the enterprises in heavy industry, the I. G. Farben never needed or received financial support from the German Government. Its cooperation with the Government and with the General Staff before and during the Nazi regime was a voluntary act of its owners. All of its enormous resources and its technical know-how were placed at the disposal of the Nazi regime. Through the I. G. Farben the German chemical industry was mobilized for war long before the outbreak of the war.

Through the Vereinigte Stahlwerke and the I. G. Farben alone, the Nazi regime was able to control, coordinate, and direct practically the entire field of armaments production—coal, iron and steel, explosives, synthetic oil, synthetic rubber, synthetic fibers, heavy chemicals, etc. The Vereinigte Stahlwerke was not an important factor in the field of machinery, but the Government controlled, through the Goering combine, the Rheinmetall-Borsig A. G., one of the largest metallurgical and machinery enterprises in the country.

During the war the Nazis created an elaborate system of so-called self-administrative agencies for the control of the country's industrial production in the form of main committees, rings, production main committees, Reich associations, economic groups, etc. All these institutions were run exclusively by the leading businessmen of the industries and were governed on the leadership principle. Only the field of consumer goods remained to some extent under agency control. Thus, the leading firms were able to dominate production and distribution in their respective fields. The creation of Reich Associations (Reichsvereinigungen) in such vital industries as coal and iron enabled dominating combines also to control business on the various levels of production and distribution. The organizational structure created by the powerful trusts and combines to promote their private interests was thus fitted into the Nazi political and military organization.

The solidity of these industrial institutions has also been demonstrated since the collapse of Germany as an organized state. Ex-war industry has announced itself ready to resume business as usual.

The cartels, combines, and trusts have shown themselves more stable than the state and the military machine. If permitted they will resume business at the old stand with the old methods, and the result will inevitably be World War III. They always used their power to promote Germany's domination of the world. There is no reason to believe that they will not do so again if they are not broken up. Experience shows that they cannot be controlled. Prohibition of cartels and other agreements in restraint of trade, abolition of industrial rings and Gau economic chambers, and any other measures short of the destruction of the trusts and combines in the coal, iron and steel, machinery, and chemical industries will not be sufficient to keep Germany disarmed. It is the concentration of economic power in the hands of a few individuals whose interests and aims remain unchanged that must be eliminated in order to make possible an effective control of Germany's war-making power.

In addition, it is recommended that the following over-all steps be taken:[4]

(1) All combines, trusts, cartels, and cartel-like organizations, such as economic groups, trade groups, Reich associations, main committees, rings, and production main committees, should be dissolved.

(2) All laws and decrees sanctioning or supporting such organizations should be repealed and no law or decree, whether specifically repealed or not, shall constitute a defense in any proceedings against them.

(3) No existing cartel agreement of any kind should be recognized as legal, including any agreement which has the effect of restricting trade.

(4) Legislation and decrees which limit the free entry of new firms into an industry, except such as a public franchise in the case of local utilities, should be repealed.

While these over-all measures should be taken immediately in order to destroy the legal framework within which cartels and combines have operated and to throw the onus of illegality on their operations, the issuance of these orders will not accomplish the dissolution of combines and cartels. In order to accomplish effectively the break-up of combines, trusts, and cartels, careful detailed analyses of the property and corporate relationship of each major combine and of the operations of the individual cartels is essential. In addition, detailed studies on the stock and management relationships of the units within the combine are needed. The units must be disjoined and the management tie-ups broken to accomplish the dissolution of the combines. And measures must be taken to insure that the units separated from the combines are not absorbed by other business organizations in such a way as to give them a monopolistic position within the industry.[5]

(*b*) *International cartels*

Through international cartel agreements, ostensibly simple business transactions, German industry has operated so as to strengthen its war-making capacity and weaken its potential enemies.

International cartel agreements are usually contracts between private interests or between private and quasi-public agencies designed

[4] Policy approved by Interdepartmental Committee on Private Monopolies and Cartels, ECEFP D-80/45.

[5] See the FEA studies on Hermann Goering and iron and steel combines and on the potash cartel.

to safeguard the industrial security and privileged position of the contracting parties. Such agreements are supranational and may be, indeed usually are, restrictive and, hence, dangerous to the well-being and security of the world.

Between the interests of an international cartel, bent on developing and maintaining industrial security, and the interests of a government bent on military and economic aggression, there is always sufficient compatibility to make cooperation profitable for both. In the case of the German international cartelists, it was not merely a case of profitable cooperation, of happy coincidence, but of joint planning for a single purpose—German domination of the world.

An aggressive government, such as the Nazi Government, seeks to build its own war potential while limiting that of its possible enemies. Both the international cartel and the aggressive government depended largely on restrictive measures to accomplish their purposes.

To the non-German members of an international cartel, the Nazi Government constituted no threat during the first years after its advent to power. Insofar as the Nazi regime sought to limit the economic capacity of its potential military enemies, it did not come into conflict with the established practices of international cartels for the protection of the privileged production positions and price policies of their members. To the extent that the Nazi Government sought to increase German production for the home market, it did not immediately threaten the protected positions of non-German cartel members.

To the German participants in an international cartel, the Nazi Government represented strong official support for their commercial goal—the achievement of increased strength, size, and profitableness of their businesses with a minimum of risk. The Nazi Government could offer an expanding home market for their products, a series of new markets as the military or diplomatic advances of the regime succeeded, the pretext of Government rules in withholding of the results of research and royalty payments from their cartel partners.

The Nazis, for their part, recognized that in the international cartel agreement which expressed the cupidity of commerce and its fear of competition, they possessed an extremely effective weapon for forging a powerful military machine. Not only could an international cartel be used to gather the most recent information on technological developments and manufacturing experiences of other nations, but it could also serve as a collector of economic information of military value and as a camouflage for espionage activities. An international cartel could be used also to hamper the efforts of other nations to prepare for the inevitable military conflict with the Nazis.

Consequently, in 1933, when the Nazi Party came into power the German participants ceased to be purely commercial or private corporations and became quasipublic agencies, informally but effectively. The instruments of commercial warfare between private interests became instruments of economic warfare between Nazi Germany and other nations. Only slight modifications or none were required to transform the devices commonly employed by international cartels into weapons with which to forge the Nazi war machine. Under the encouragement and protection of the Nazi Government, the German participants in international cartels converted their possession of a licensable patent into an instrument of

coercive control of prospective enemies; their promise to abide by a particular price policy in the nonexclusive markets was metamorphosed into a draft on the technological advances, results of research and of manufacturing experience of other nations. To the Nazi administration, the royalty statements provided by non-German cartel members to their German partners became a guide to the state of military preparedness of other nations, and the maintenance of German commercial agents in other countries provided a cloak for Nazi espionage agents.

The instrument of the international cartel organization proved to be adaptable to a variety of situations which faced the Nazis. Nazi Germany sorely needed bauxite and aluminum manufacturing facilities in order to create a supply sufficient for war purposes. Through the use of the Alliance Corporation, the international aluminum cartel, the Nazis were not only able to strengthen their own supply and production position but also to impose restrictions on that of prospective enemy nations. As early as 1935, the German aluminum producers informed their partners in the Alliance Corporation that the Nazi Government would not permit them to abide by the limitations that had been imposed by the international cartel agreement in order to maintain high prices for aluminum. During the negotiations that followed, the French, British, and Canadian producers (the last controlled by the Aluminum Co. of America) agreed to permit the Germans to expand production in Germany upon their promise not to disturb the foreign markets by exporting their production.[6] Thus, increased supplies were made available in Germany for the building of the Nazi war machine. Limitations of production in other countries were maintained, however, in order to protect the established price levels.

To obtain the results of research and the experience of the leading manufacturer of gyroscopic instruments, the Sperry Gyroscope Co., Inc., of Brooklyn, N. Y., the Nazi Government gave its support to a German company in order to compel the formation of an international cartel agreement with the American company.[7] Negotiations between Sperry Gyroscope Co., Inc., and the Nazi-supported Askania Werke A. G. resulted in the signing of a contract in 1933 which gave Askania Werke A. G. an exclusive right to all current and future gyroscopic developments made by Sperry Gyroscope Co., Inc. In return, Askania Werke A. G. agreed to give similar rights to Sperry Gyroscope Co., Inc., and also not to manufacture any competing instruments. Although the American firm did abide by the agreement, the Germany company withheld the promised information on the ground that the Nazi Government forbade the disclosures required by the contract.

In areas where German research had been superior and where German firms controlled the basic patents, the international cartels served not only as a source of vital information and valuable foreign exchange but also as a means of controlling the productive facilities available in other countries. Thus in the case of various pharmaceuticals, the German companies had been able to write favorable commercial terms into their contracts with producers of other nations by

[6] A full account of the history of aluminum cartel negotiations is included in the TIDC report, project 26.
[7] An account of the utilization of the agreement between Sperry Gyroscope Co., Inc., and Askania Werke A. G. is included in project 26.

virtue of their control of the patents. For example, it was common practice in such cases to limit American members to the United States domestic market, the British partner to the market in the British Empire, and to reserve the rest of the world market for the Germans. During the decades preceding the war, this meant that the supply of various pharmaceuticals was restricted and prices were kept at an artificially high level. During the war, however, when our needs were increased, it was found that our productive capacity had to expand rapidly to meet essential demands of the armed forces.

In the case of the ammunition-priming composition, tetracene, the international cartel agreement proved to be a barrier to our providing Great Britain with that essential commodity when she was engaged in the war against Nazi Germany. The basic tetracene patent in Germany, United States, Great Britain, Canada, and several other countries was owned by a German corporation, the Rheinisch-Westfaelische Sprengstoff A. G. Between 1929 and 1931 the RWS signed a licensing agreement with a single company in each country assigning the patent to that company. By the terms of the 1927 agreement the American partner to the cartel, Remington Arms Co., Inc., agreed not to sell any tetracene-primed military ammunition in Great Britain or in the British Empire. Thus, when England urgently needed supplies of military ammunition in 1940–41, no American company was permitted to sell her any that was primed with tetracene.[8]

To this point, the cases reviewed have indicated the use made by the Nazi Government of the ordinary commercial practices in which international cartels engaged in order to safeguard the privileged positions of their members. In addition, however, the German cartel members permitted the Nazi Government to employ their offices in foreign countries as centers for espionage activities. In 1940, for example, Dr. E. von Heyde, formerly of I. G. Farben, later with the OKW, wrote to Dr. Georg von Schnitzler of I. G. Farbenindustrie that:

> As you know the OKW (Supreme Command of the Wehrmacht) has repeatedly expressed its request for all possible help in placing its confidential agents (Vertrauensleute) abroad. The OKW has approached us in regard to cases in which it was desirable to incorporate permanently into our foreign organization a trustworthy person in regard to cases where temporary backing for confidential agents on individual trips abroad of limited duration was needed.
>
> As I explained at the last meeting of the commercial committee, not only the OKW but also the Reichssicherheitshauptamt (Reich Security Main Office) has such desire and pursues its specific aims in accord with the OKW.

In reply Dr. von Schnitzler wrote Dr. von der Heyde on the 3d of April 1940 that:

> I recently had occasion in Berlin to discuss with Major Block, of the OKW, another matter pertaining to this subject, that is, whether and to what extent the OKW wants to use the services of the association for sales promotion (Gesellschaft für Verkaufsförderung) which is under the management of Messrs. Künsler and von Puttkamer. This company is particularly well suited for the intended camouflaging maneuvers, since the failure of one of its emissaries will never lead to a catastrophe; if worst comes to worst this company might have to cease operating in some particular country and would have to confine its activities to the other neutral countries.

More recently, on November 9, 1943, the Wirtschaftspolitische Abteilung addressed a letter to Dr. Oberhoff of I. G. Farbenindustrie requesting the aid of the company in placing a confidential agent in Spain under the guise of an employee of I. G. Farbenindustrie:

[8] An account of the relations between Rheinisch-Westfaelische Sprengstoff A. G., Remington Arms Co., Inc., Canadian Industries, Ltd., and Imperial Chemical Industries, Ltd., is included in project 26.

Lieutenant Colonel Bocher is shortly going to Spain on orders of the Abwehr (Wehrmacht Intelligence). However, since it is not supposed to be known there that he is attached to this agency, he is to be camouflaged by becoming part of some firm. Since Bocher is a wool merchant by trade, it was first thought advisable to place him with a wool purchasing firm from Sofindus. For special reasons this is not possible and the RWM is now inquiring whether the I. G. would be able to find a place for Mr. Bocher.

The intimacy of the relation between the leading German participant in international cartels and the espionage section of the Wehrmacht Supreme Command is attested by the letters exchanged by Colonel Pickenbrock, General Staff chief, counter espionage, section 1, Wehrmacht Supreme Command, and Dr. von Schnitzler, of I. G. Farbenindustrie, on the occasion of the departure of the former for duties at the front:

MARCH 15, 1943.

DEAR HERR VON SCHNITZLER: I would like to inform you that I am shortly leaving Berlin and my present office to take over a command at the front. I feel particularly urged to thank you for the valuable cooperation which you have extended to my office. I shall always retain pleasant memories of the personal and official collaboration with you.

I should like to take this opportunity of asking you to give the same support to my successor, Lieutenant Colonel Hansen.

With many thanks and Heil Hitler, I remain,

Yours very devoted,

(Signed) PICKENBROCK.

MARCH 24, 1943.

DEAR COLONEL PICKENBROCK: I thank you very much for your kind note of 15th March and take the liberty of expressing my best wishes for your front command.

I and my colleagues working here at Frankfurt on foreign business have always considered it a duty of honor to be always at your disposal for your special tasks. This will, of course, be the same in the future after your successor, Lieutenant Colonel Hansen, has taken over.

With cordial regards and Heil Hitler, I remain

Yours very devoted,

(Signed) v. SCHNITZLER.

In evaluating the extent of I. G. Farben's usefulness as an espionage agent of the General Staff, it should be borne in mind that in America, for example, through the American I. G. Chemical Co. (now General Aniline & Film Corporation),[9] the I. G. Farben was a member of the Board of the National Industrial Conference Board, an economic research organization of American industry. Representatives of the United States War and Navy Departments were also members of this Board. In highly secret sessions, these representatives from time to time informed the Board on the status of the American military and naval forces. These sessions, as it turned out, were in fact open to the German General Staff, through the presence of the head of the American I. G.

The extent of the world position of I. G. is illustrated by its influence in American industry. In the United States the I. G. through option agreements on capital stocks, cloaked ownership by intermediaries in non-German countries, written or unwritten understandings, patents and patent agreements had an interest in the following enterprises:

General Aniline Film Corp.
General Dyestuff Corp.
Chemnyco, Inc.

[9] Corporation taken over by Alien Property Custodian.

Advance Solvents & Chemical Corp.
Synthetic Nitrogen Products Corp.
Carbic Color & Chemical Co., Inc.
Standard Oil Development Co.
Jasco, Inc.
Standard I. G.
Verona Chemical Co.
Penchlor, Inc.

The close alliance between the German cartelists and the Nazi Party, the willingness with which the German members of international cartels supported Nazi aims, both before and after nazism was established in Germany, makes it imperative that all German participation in international cartel agreements be abrogated immediately and prevented in the future, if the basis for international security is to be laid now.

Recommendations for the elimination of the dangers involved in German participation in international cartels are divided into two parts: (1) Measures that should be taken during the period of military occupation and (2) action necessary to continue the effectiveness of these measures after occupation. The latter will require intergovernmental action on a diplomatic level.[10]

Recommendations for immediate action.—1. All German participation in international cartels should be terminated immediately. Termination is preferable to suspension, since the latter implies that such agreements will again come into force after the lapse of a period of time.

2. A diligent and painstaking search of company and governmental records should be instituted immediately in order to obtain in Germany and Austria all available information pertinent to German participation in international cartels and ownership of property in non-German countries. Destruction and withholding of such information should constitute cause for severe punishment.

3. Effective diplomatic steps should be taken in neutral and liberated countries to secure similar data, both as a means of checking the material obtained in Germany and Austria and of preventing the deployment of German cartel assets and activities for use in rebuilding the German war machine.

4. A detailed study should be undertaken immediately of each German participant in international cartels in order to effectuate permanent termination of such activities and to determine the availability of German cartel assets for reparation and for settlement of the property claims of non-German members.

Recommendations for diplomatic action.—Elimination of German participation in international cartels would not eliminate the dangers inherent in the existence of secret agreements restricting the use of patents, limiting the quantity of production, fixing excessive prices, and allocating world markets so as to give a monopolistic position to individual members of the cartel in certain world areas. In their fields of activity, international cartels perform the functions of an international government.

International security demands the adoption of an international cartel convention designed to eliminate all restrictive measures imposed by international cartels and the creation of such international agencies as may be essential to the implementation of the convention.

[10] The recommendations that follow have been approved by the President and forwarded to the American representative on E. A. C. and to the U. S. G. C. C. in ECEFP D/61/45.

At the moment, emphasis is placed on the dangers involved in permitting the continuation of German participation in international cartel agreements because of the close relationship and compatibility of purposes among the German General Staff, the Nazi Party, and German industrialists. In this connection, it must be emphasized also that the participation of Germans in international cartels after World War I was encouraged by non-German monopoly interests desirous of protecting themselves from the competition of German industry. An international cartel convention to outlaw such organizations is essential to forestall a repetition of the reestablishment of worldwide competition-throttling contracts characteristic of the post World War I period.

Emphasis on the dangers of German participation in international cartels should not obscure the fundamental fact that world welfare is threatened by the existence of any commercial restrictive organizations, regardless of German participation.

(c) *Landed Estates* [11]

Though this section is limited primarily to an analysis of the formal institutions which should be eliminated in order to accomplish the initial disarmament of Germany, and the system of landed estates perhaps does not fall wholly within that category, it is included here because—

(1) The continuity of the system has in fact given it a well-defined status and the owners a social position in German society, which was used and abused as the economic basis of the professional German militaristic group.

(2) It can be attacked in a formal over-all manner by legislation or executive directive. The formal aspects of the system—huge concentrations of ownership of land—if not the sociological aspects, lend themselves to direct formal attack. Even if the social status of the Junkers cannot be changed by edict, the ownership of the estates can be changed, and the land can be divided.

In order to abolish the economic, political, and social stronghold of the landed aristocracy, and to lay the foundations for a more democratic rural society of family farmers, it is recommended that—

(1) The property in approximately 18,000 landed estates (those with 100 hectares or more of land in agricultural use in a unit of scattered land) be transferred, subject to review and approval by the Control Council Group, to the German government or to a custodian appointed by and responsible to the Allied Control Council Group. Whether and to what extent the former owners shall be compensated, may be left for later decision by the German Government subject to review and approval by the Control Council Group. The custodian shall be directed to formulate plans for the subdivision of the estates and their resettlement by family farmers with title to small farms of 10 to 20 hectares each in agricultural use.

(2) Because of the difficult administrative and managerial tasks of resettlement on a large scale, for the first 2 or 3 years it is imperative that interim methods be adopted to prevent a collapse of food production on the 4.3 million hectares of farm

[11] For more complete discussion of the question see TIDC Report No. 23.

land in agricultural use on the large estates. Such interim methods involve—

(*a*) Temporary freezing of all land titles, including those on small farms;

(*b*) Dispossessing and removing former estate owners from the land and its control and substituting a custodian appointed by and responsible to the Allied Control Council Group;

(*c*) Selecting other managers than those previously responsible for maintaining food production on estate lands; and

(*d*) Utilizing available large scale machinery through cooperative effort.

Such solutions should guarantee the full utilization of the existing productive resources without interfering with the final establishment, with full title, of many additional independent farms.

(3) Administration of landed estates should emphasize increased output of foodstuffs in terms of calories per hectare and per farm during the immediate postwar years.

D. Denazification

No discussion of institutional disarmament is complete without some reference to a denazification program. A thorough denazification program, which cuts across all German life and institutions, is basic to the success of any disarmament program. The previous recommendations as to institutional disarmament assume the retention and utilization by the Allies of some German agencies, departments, or organizations; that assumption cannot be realized until a thorough denazification program is energetically carried out. Institutional disarmament will accomplish little if the personnel in the retained agencies maintains spiritual allegiance to Nazism; their functions and activities will be in danger of perversion. This war was fought to rid the world of Nazi rule, and no pleas of temporary administrative convenience should deprive the Allies of the fruits of victory.

Military government should eliminate from dominant positions in industry, trade, and finance, without regard for expediency, active Nazis and supporters of the Nazi regime and other individuals hostile to Allied purposes. German nationals deprived of their positions because of affiliation with or support of the Nazi Party, or because of disloyalty to the military government authorities shall be replaced as far as possible by other German nationals. In recruiting replacements, military Government officers should rely as much as practicable on the leaders and personnel of freely organized labor unions and professional associations and of such anti-Nazi political groupings and parties as may arise in Germany.

E. Other Institutions

The Allies should enforce a complete program of German institutional disarmament. It should include besides the economic and military institutions dealt with in the preceding subsections, the institutions in the political, social, professional, educational, religious, and propaganda fields, which have contributed to Germany's war-making and to the development of war-mindedness. The discussion has been limited to an analysis of the institutions which have had a

direct part in the development of Germany's economic capacity to make war.

Institutional disarmament in other fields is no less important or essential. For example, nothing has been said here of the elimination of the Nazi Party and its affiliated organizations and the host of propaganda agencies. It is abundantly clear that the abolition of such offices as the Reich Ministry of Popular Enlightenment and Propaganda, the Reich Genealogical Office, or the Reich Ministry for Church Affairs, is an essential part of a program of institutional disarmament. The Nazi psychological institutions were completely dedicated to the propagation of the Nazi philosophy. They performed no functions which need be continued. Therefore, their complete elimination is recommended.

Apart from these institutions, which were directly Government controlled, notice should be taken also of the private or seemingly private associations (Vereine), clubs (Klubs), and societies (Gesellschaften) which have promoted militaristic, imperialistic, nationalistic, or Nazi objectives. The task of controlling them is somewhat facilitated by the fact that most private associations have been integrated or coordinated with the party and with party affiliated or supervised organizations, which will be prohibited. How far this process of integration has been completed is difficult to judge because of lack of sufficient information. This will have to be determined in the field. According to the German Civil Code, such associations must be registered in the Vereinsregister of the local court (Amtsgericht). It is recommended that these registers be scrutinized to learn what private associations have survived. The following are examples of types to be eliminated:

1. Military associations, such as the German Officer League (Deutscher Offiziersbund) or Associations of Regiments (Regimentsvereine).
2. Social associations of upper-class groups (Junkers, industrialists), such as the famous Herrenklub (von Papen) in Berlin.
3. Pan-German associations, such as the Alldeutscher Verband.
4. Associations promoting colonial expansion, such as the Reichskolonialbund.
5. Associations spreading Nazi propaganda in foreign countries, such as the German Fichte League (Deutscher Fichte-Bund) and the German Nordic Society (Deutsch-Nordische Gesellschaft).
6. Associations for the promotion of German "Kultur" and language, insofar as they put emphasis on racial superiority, such as the German Language Association (Deutscher Sprachverein).

Furthermore, the following types of associations should be thoroughly investigated and denazified: Sports, gymnastics, hunting, riflemen, and singing associations; professional organizations surviving outside the party organization, and associations of owners and lessees of suburban garden land. These and similar seemingly innocent organizations have been woven into the Prussian and Nazi social pattern. They have served to glorify war-like activities and as symbols of Prussian cultural values. It is worth noting that among Hermann Goering's special titles were those of Reich Master of the Hunt and Reich Forest Master. This is but one example of the extent to which apparently harmless organizations have been perverted and of the extent to which they will have to be controlled.

BIBLIOGRAPHY FOR SECTION IV

The following studies previously prepared by FEA should be consulted for a more detailed analysis of the material included in section IV: An Institutional Disarmament Program.

A. Civil Affairs Guides and FEA Staff Reports

(Where the study was published as a Civil Affairs Guide, the War Department identification is noted.)

	EIS No.	War Department Pamphlet No.
1. The Elimination of Nazi Public Agencies	74	31-133
2. Organization and Techniques of German Ministries	14	----------
3. The Reich Ministry of Armament and War Production (Speer Ministry)	13	----------
4. The Reich Ministry of Food and Agriculture and the Reich Forestry Office	34	----------
5. The Elimination of Nazis from the German Banking Structure	63	31-111
6. The Reich Ministry of the Interior	12	----------
7. Courts and Judicial Administration in Germany	3	31-106
8. Control, Ownership, and International Relationships of Leading German Combines	27	31-132
9. The German Postal Ministry	24	----------
10. Preservation and Use of Key Records in Germany	53	31-123
11. The Administration of the German Iron and Steel Industry	72	31-174
12. Coal Production and Distribution in Germany	21	31-151
13. Denazification of the Health Services and Medical Profession in Germany	78	31-158
14. Synopsis of German Ministries and Administrative Agencies Concerned with Economic Controls	8	----------

B. TIDC Reports

1. The Post-Surrender Treatment of German Participation in International Cartels From the Standpoint of International Security. Project 26.

2. The Post-Surrender Treatment of German Governmental and Economic Institutions From the Standpoint of International Security. Project 28.

3. The Post-Surrender Treatment of German Industry Involved in the Production of Armament, Munitions, and Implements of War From the Standpoint of International Security. Project 1.

4. The Post-Surrender Treatment of German Engineering and Research Related to Armaments, Munitions, and Implements of War From the Standpoint of International Security. Project 3.

5. The Post-Surrender Control of German Foreign Trade From the Standpoint of International Security. Project 27.

SECTION V. AN EXTERNAL SECURITY PROGRAM

CONTENTS

	Page
A. Background and general considerations	219
B. Foreign bases of German rearmament	222
1. Russia	222
2. Other countries	223
C. Acquisition of economic resources for German war effort	225
1. Purposes	225
2. Methods	225
D. German techniques in transferring of capital	233
1. The cloaking device	233
2. German loans to neutrals	234
3. Dealings in looted gold	234
4. Acquisition of foreign exchange	235
5. Disposition of looted art	236
6. The volume of German assets abroad	237
E. Conclusions and recommendations	238
1. Necessity for international agreement; the need for a German External Security Council	239
2. The necessity for adequate national machinery	242
3. The need for adequate investigation of external security	243
4. The treatment of German foreign assets from the standpoint of external security	245
5. The treatment of German personnel abroad from the standpoint of external security	250
6. The treatment of German foreign trade and international financial transactions from the standpoint of external security.	252
7. The treatment of the neutrals	255

Section V

AN EXTERNAL SECURITY PROGRAM

A. Background and General Considerations

The problem of security against German aggression is divisible into two geographical parts. The first is the problem of a control of Germans within Germany. The second is that of control in areas outside Germany of the war-making powers of Germans, their allies, and friends.

There are three primary aspects to this problem of external security. The first has to do with the evasion of the controls over the enemy territory and the enemy population. It may be as essential to prevent Germans in country X from making an atomic bomb as it is to prevent them from so doing in Germany. The second aspect concerns German penetration of countries earmarked for future conquest or other future disturbances connected with a recurrence of aggression. The third has to do with the creation of foreign funds and other means of continuing aggressive programs not otherwise available within enemy territory. An effective external security program must be directed toward a long-term suppression or control of the areas of possible danger.

The problem of the Allies is to prevent the use of resources inside and out of Germany for the purpose of supporting or aiding aggression. Either through destruction, removal, or control, potentially dangerous German elements in the economic and social structure wherever located must be dealt with effectively if we are to have world security.

German nationals operate far beyond the boundaries of the Reich. They invest German capital in foreign fields; they build up strong sources of potential supply for the use of the home front. They carry German technical skill and influence into the economies of all nations. Through patents, copyrights, cartel, and other trade agreements, they tend to control many important industries in widely scattered outposts.

Not all of this activity is hostile in its inception; much of it is a natural expansion of international trade. The fact remains, however, that when those in control of German policy decide the time is ripe for aggression, these foreign assets and resources are invaluable adjuncts which may be quickly mobilized for use. Much of the foreign economic activity of Germans, however, has been directly planned with a future war in contemplation.

The problem of control in the area external to Germany may be quantitatively less than in Germany, but it is nonetheless qualitatively as serious. Certainly a mere geographical boundary line is in this respect important only because there are more Germans on one side of it than on the other. But in view of the methods of German expansion before this war and the various German programs of enlisting aid of so-called coracials and business friends and people of friendly ideology in other countries, the problem of resurgence of German

aggression with the aid of individuals and institutions in foreign countries is too important to be restricted or minimized.

It follows, therefore, that the total external security problem is not limited to economic matters, nor is it limited to "assets." The external security problem is in essence the same problem of control as that which exists within Germany—it is a problem of control of movements of individuals, cultural organizations, pan-German resurgence activities, prototype manufacture, maintenance of industrial skills and technical schools, military training and experimentation, and the like. The economic aspects of the total question have been a major concern of the FEA Enemy Branch. They are important insofar as all forms of menace to external security may derive their nourishment from economic sources. The United States Government, as a whole, however, and the peace-loving governments of the world, cannot limit their consideration of the external security question to the single factor of economic interest. On the contrary, cultural attacks, whether or not they are connected with economic factors, are often deadlier. Certainly the maintenance of schools, research laboratories, and the like, exchange students in universities, experiments by scientists, etc., may be manifestations of a resurgence of the German military menace, and they are not economic in nature.

These considerations, together with a mass of supporting data, have been developed in more precise detail in the TIDC report on project 25 prepared by the external economic security staff of the FEA Enemy Branch.

It should be emphasized that the problem of external security is a vital part of the whole task which the Allies have undertaken. It would be an accomplishment of paramount importance for the world's security if Germany could be prevented, even for a generation, from using foreign nations as fields for economic development for war and for the sowing of propaganda, based on economic activities. Therefore, a particular External Security program is included as an essential part of the FEA Disarmament Report. This program to be developed is based on certain basic considerations, which should be stated at the outset.

We must assume that some Germans who have left their homeland and established themselves abroad are open to suspicion as a possible source of hostile German activity. This is forced upon us by the whole course of German policy as an aggressor nation. Her attacks on Austria in 1866, on France in 1870, France and Belgium in 1914, Czechoslovakia and Poland in 1939, Norway, Holland, and Belgium in 1940, and Russia in 1941, constitute a record which can be approached only by that of Japan with her attacks on China, Russia, Manchuria, and the United States.

In all of the German attacks, particularly in those since 1900, the German abroad and the assets which he controlled have been of vital assistance to the homeland.

Unfortunately, all German nationals must remain under some degree of suspicion until the German nation itself ceases to be a menace to world security. To seek to divide Germans into Good and Bad in terms of their unrestricted right to engage in all economic operations outside Germany is impracticable and dangerous. Obviously, there are degrees of danger from Germans abroad based upon their character and training. German technicians, managerial

personnel, industrial and commercial leaders, propagandists, and the like may be particularly dangerous, if imbued with either pan-Germanism or Nazi ideology.

The control of personnel, particularly those tied into some important economic activity, is, therefore, one of the major problems of the Allies. When we consider the question of what to do with German foreign assets, we are confronted with great traditional difficulties, deep-rooted in certain concepts of international law and precedent. There is much in the law books and in the debates on this question which stresses the inviolability of private property located abroad as a source of reparation or as a subject for expropriation and disposition by a conqueror. If we yield to these arguments, we abandon all real control of German military resurgence, based on foreign holdings.

The control over all important German-owned or -controlled industrial, commercial, and financial assets located outside Germany must be wrested from the nation and its nationals regardless of when acquired and regardless of pro-Nazi or anti-Nazi sympathies of the holder. The future use or disposition of all German assets outside Germany must be conditioned by the interests of international security. This is a policy dictated by practical necessity. No other can be adopted without a full recognition of the dangers involved.

The acquisition of title to or control of these foreign assets of Germans in neutral countries by the Allies is a legal, diplomatic, and administrative problem of no small magnitude. All sources of possible legal transfer should be employed including action by a German Government de facto or de jure, treaties with countries where the property is located, and such other cooperative action between the nations as can be secured. For only by joint action can the end be accomplished and only by the nations working together can Germany be effectively controlled. There must be left no "safe haven" for German capital or influence immune from action taken elsewhere.

It is not safe to permit individual nations to handle the problem within their own borders except as part of a general plan worked out jointly. Such a plan should be based fundamentally upon security and not upon profit or high returns for settling claims or paying reparation. It must be broadly conceived and executed and continuously administered for a sufficiently long period to insure the permanent disarmament of Germany economically as well as militarily.

In the absence of such a plan, individual nations may well yield to a variety of considerations in dealing with enemy assets. Already proposals are heard that indicate that our primary concern with German assets is that they should be used to satisfy the claims of the country where located and of its citizens. That is a dangerous suggestion for many reasons. Suffice it to say here that its chief danger is the temptation to place the money value of the assets first in importance. The inevitable tendency would be to get as much return as possible. The policy of maximum returns, however, should be completely subordinated to long-term security considerations. Certain assets of great money value such as armament and munition plants should be destroyed. Other plants and assets may be of greater value in the general plan of disarmament of Germany and rehabilitation of other nations if transferred under conditions that involve some monetary

sacrifice but insure to the maximum the prevention of their return into the hands of Germans or their collaborators. In short, only by a properly devised and coordinated plan can the maximum of security be accomplished.

Similar problems of external security exist with reference to commercial and financial activities involving foreign trade and the exchange of money between Germany and the outside world. Their abuse as instruments of aggression and the use of export and import controls and the elimination of German international cartels by the Allied Control Council to meet this situation internally have been emphasized in other sections of the report. (See sec. II and sec. IV.) The desirability of constructing auxiliary international arrangements to insure the cooperation of nations other than the occupying powers will be developed briefly in this section.

The utilization by the Germans of other countries and their resources as bases for aggressive activity and the factual basis of an external security program are set forth in subsections B through D, followed in subsection E by the conclusions and recommendations constituting the proposed external security program.

B. Foreign Bases of German Rearmament

Not only did the Germans evade the peace treaty through action within Germany but they made some foreign countries bases for their operations.

1. RUSSIA

In April 1922 Germany and Soviet Russia buried their World War I and other differences to form a front on certain questions against the Allies by signing the Treaty of Rapallo. Russia renounced any claims for reparation from Germany in return for German renunciation of all claims by its nationals against Russia arising from the Russian revolution. Both powers promised to live together in peace and concord for the future.

Shortly after this diplomatic bombshell burst, a secret agreement was concluded between Germany and Russia which provided for secret rearmament for Germany on Russian territory. This agreement was formally characterized as military and was signed for Germany by the Commander in Chief of the Reichswehr, Col. Gen. Hans F. L. von Seeckt. It is important to point out that this was done not only with the knowledge but at the order of a Social-Democratic President, Friedrich Ebert, and a Democratic Minister of Foreign Affairs, Walter Rathenau.

In accordance with this agreement and others made between private German firms and Soviet Russia, Russian facilities were made available to the Germans. The large electrical firm of Siemens-Halske was permitted to reopen its Russian plants that had been in operation prior to World War I under German management using Russian labor. Even more dangerous to world security was the large airplane plant built by Junkers in Moscow for the production of military aircraft by German technicians. Publicity on this affair in 1926 first disclosed to the general public the details of the Reichswehr's plans for rearmament. The Reichswehr Ministry set out early in the 1920's to give financial assistance to industry to set up armament industries abroad, especially

in Russia. The Junkers plant in Russia was only one of the projects sanctioned by the Reichswehr. The production of this plant was given over entirely to war planes, the majority of which were for German use. The Russians permitted German officers to train with them. In this manner the Germans were able to maintain a number of skilled aviators who could become the nucleus of a new air force.

Russian assistance to German military ambitions went even further. The *Manchester Guardian* revealed many of the secrets of these Russo-German relations in a series of authenticated articles. The Hamburg firm of Hugo Stolzenberg built a poison-gas factory in Trotsk with the cooperation of the Reichswehr. In November 1926 Russian ships arrived in Stettin loaded with arms and ammunition for the German Army. The Krupps were reported to have leased no less than five armament plants from the Russians and to have secured large concessions in the Leningrad steel factory, the Perm factory, the Zlatoust plant in Kuibyshev and to have built a dockyard for submarine construction in Kherson which was managed by German naval officers. As a final concession, the Russians permitted Krupp to establish a subsidiary to consolidate its interests in Russia.

Other German industrial organizations were active in Russia during the 1920's. Rheinmetall-Borsig, the largest armament plant in Germany after Krupp, erected a most modern munitions plant in Leningrad, the Putilow works, for the Russian Government with the support of the German General Staff. I. G. Farben, the Hugo Stinnes firm, and other concerns directed or owned plants in Russia, while the Reichswehr ran experimental centers for artillery, aviation, tanks, motors, flame throwers, and poison gas. In the field of poison gas Russians produced the gas and shipped samples to Germany to test for antidotes. Research in heavy artillery was carried on in collaboration with the Russians who were keenly interested in using German technical knowledge. In addition, large numbers of German engineers and technicians received Russian employment contracts. These agreements provided the Russians with skills needed for the development of their country and at the same time gave surplus German experts a field of activity. All this was done at a time when Germany was supposed to be disarmed. By the middle 1930's, however, these close technical relations between Germany and Russia were severed.

2. OTHER COUNTRIES

Further evasions of the Treaty of Versailles were perpetrated in other countries. Shortly after the war a German aircraft firm established a plant in Copenhagen to produce military planes. In 1920 Krupp bought a large interest in Bofors of Sweden in order to continue experimenting and producing heavy ordnance. This plant developed the famous antiaircraft guns. About 1935 the Swedes allegedly purchased the Krupp holdings, although it is suspected that technical cooperation continued. German rifle experts were employed by the Fabrique Nationale in Liege (Belgium), while other German engineers found employment with the Skoda armament works in Czechoslovakia and the Oerlikon armament firm in Switzerland. A Major Utto owned and operated a bomb factory in Finland which was constructed according to German design. The Dornier airplane firm moved from Friedrichshafen across Lake Constance to Switzerland, and the

Fokker plant was dismantled and shipped to Holland. Carl Zeiss of Jena set up an establishment in Holland for the manufacture of military optical goods.

Under the treaty, Germany was prohibited from building submarines. To overcome this handicap, the German Navy in 1924 secretly made arrangements for construction work in Spain. At Santander two model submarines were built and the German U-boat ace, Capt. Manfred von Killinger, founded a company in Echevarria to experiment with submarines. Spain was the scene of other activities such as research work in torpedoes and the expansion of German penetration in heavy industry.

After 1918 under the impact of the growing destruction of German currency by the inflation a great deal of liquid capital, individual and corporate, fled to Switzerland and other countries. Another motive for capital flight from Germany was attempted evasion of special levies in connection with German reparation payments. Swiss estimates put the amount of capital that had fled from Germany to Switzerland at near $2,000,000,000 by 1919. While some of this flight capital returned to Germany after the restoration of the German currency, huge amounts remained in hiding. This was made so much easier by Swiss banking law and its protection of anonymity of accounts. The point is that no matter what motivated German capital in the beginning to go into hiding outside the country, under the Nazi regime such foreign assets became a vital factor in the financing of German rearmament.

In a similar way western Europe, England, and the United States, attracted by the high interest rates which Germany had to offer, in the middle 1920's, made legitimate business loans to revitalize German industry and to finance German public works. In 1925 both Krupp and the large western German steel companies which were brought together in one giant company were saved from impending bankruptcy by such foreign loans. In the light of later developments, however, the same commercial loans must be regarded as one of the most important milestones in the history of German rearmament.

The Germans also developed air lines in South America which after 1926 and especially 1933 became increasingly significant as a training ground for the Luftwaffe and as German propaganda and military espionage organizations. The Deutsche Lufthansa, the German Government-owned airline combine, was the key holding and directing company for air lines established in Colombia, Brazil, Bolivia, and other South American countries. In the late 1930's German air bases were opened in Colombia and Brazil which were within striking distance of the Panama Canal. This and other facts inspired President Roosevelt in September 1941 to denounce the Nazi plan to attack the Panama Canal.

An important instrument of German influence in foreign countries which was not crushed after World War I was the international cartel. Because of the enormous importance of this subject, a special study (TIDC project 26) has been prepared. This subject is treated in section IV of this report, as a part of the institutional disarmament program.

C. Acquisition of Economic Resources for German War Effort

1. PURPOSES

In order to wage total war, the Nazis had to import such products as foodstuffs, iron ore, ferroalloys, and timber, and had to secure an uninterrupted flow of these and other essential products through economic control and penetration of the countries rich in the needed resources. But there were other important reasons for German interest in foreign countries. Economic penetration usually precedes political influence and may become a powerful force in molding public opinion and creating a strong economic bloc. German investments in, and economic agreements with, the neutrals have tended to make them susceptible to other German pressures and to prejudice the position of the United Nations.

When World War II broke out, the Germans were already strongly entrenched in Spain, Switzerland, Sweden, Turkey, Argentina, and Portugal—the important neutrals—as well as in Finland, Bulgaria, Hungary, and Rumania. It must be remembered that in Germany all economic activities, particularly in foreign countries, were carefully planned by the Government and seldom left to individual initiative. Old established investments, contractual rights, personnel, and other assets were made to serve immediate war objectives. During the period of German successes, the economic structure erected during the years of peace was strengthened by additional capital, personnel, and techniques which moved a steady flow of materials to Germany. There is no doubt that the German position in neutral countries impaired our bargaining position and rendered our blockade more difficult than it otherwise would have been.

2. METHODS

(a) *Loot.*

Axis looting of the occupied countries ranged from the crude seizure of property without semblance of legality to subtle transfers through changes in corporate structures and forced sales. Confiscation of state property and expropriation of private property without compensation were favorite devices of the Nazis in their economic penetration techniques as exercised in occupied countries, especially in eastern Europe. Confiscation by individual act of seizure or by property decree has been especially directed at the property of patriots and anti-Nazis who fled from Germany and the occupied countries and at the property of Jews. "Aryanization" of property in every occupied country has been the special name given to looting of the property of Jews. A legalistic form of seizure was the imposition by court decree of excessive fines for trivial offenses; such fines were often followed by an offer to accept property in place of the fine. Such loot was often transferred to neutral countries for sale.

Very often purchases were made at prices far below the real values, particularly when owners of enterprises in occupied areas were forced to accept payment in stock in the new controlling German enterprises. Throughout German-occupied territories, especially in western Europe, the Nazis purchased property with funds obtained from levies on the occupied country for occupation costs. Sometimes non-German owners were coerced into selling property at a low price by the Ger-

mans, but the fiction of a legal transaction was retained. In cases where non-German owners received a fair price, looting in the narrow sense did not occur but did in the wider sense that the conquered peoples furnished the currency for these purchases and were thereby defrauded collectively.

Exactly how large the amount of loot is cannot be estimated. There have been numerous reports of German use of the diplomatic pouch in transferring loot to neutral countries. Loot probably consisted of securities, foreign currencies, gold and other precious metals, jewelry, and other readily movable goods of high intrinsic value. While most of the German loot has remained in the occupied country as a productive unit or has been transferred to Germany, certain types of loot have found their way to the neutrals for safekeeping or sale.

(*b*) *German long-term investments*

By far the larger part of German holdings in the neutrals is in the form of long-term investments of many years' standing. At the outbreak of the war, these German investments were mobilized for war purposes; many had been created with such a purpose in mind. In Spain, Portugal, Turkey, Sweden, and South America, German commercial agents and merchants expedited the flow of essential commodities to Germany, often being instrumental in smuggling and blockade-running. In several neutral countries, the Germans acquired interests which put them in a dominant position in a number of industries. For example, in Spain the chemical, pharmaceutical, and electrical goods industries are largely in the hands of German companies whose plants are readily adaptable for use in experiments which could be the basis of a new war industry. In Portugal the Germans invested heavily in wolfram mines; in Argentina, in large construction and electrical supply companies.

In general, German long-term foreign investments were built up in the period between the two World Wars. Often the simplest procedure was for a large German company such as I. G. Farben, Siemens, Bosch, or Schering to establish and incorporate a subsidiary in the neutral country. Several German banks have entered the neutral countries where they have spearheaded German economic penetration by assisting German businessmen with liberal credits. This has been most true in Spain, Argentina, and Turkey. Through reinsurance agreements, mostly of recent origin, neutral insurance companies have been tied to German capital and forced to accept German dictation; in addition, German insurance companies operate directly in the neutrals thereby creating large fluid assets. In Spain alone there are ten registered German insurance companies receiving premiums of almost $3,000,000 a year.

(*c*) *Patents*

One of the most common and successful means of German penetration abroad has been through patents. It is not implied that patent coverage, at home or abroad, as such is necessarily more than regular business procedure, but in the hands of a regime bent on expansion and conquest, patents become an important tool, not only as an aid in acquiring controlling influence on foreign industries, but also as a means of securing information of strategic value. On numerous occasions in the United States German companies through patent agreements were able to obtain highly confidential technical

data. For example, in 1928 the German armaments firm of Fried. Krupp formed a patent-holding company, Krupp Nirosta, in the United States in the stainless steel field. This company controlled the most important patents in stainless steel and limited the number of licensees, thereby limiting production of a vital war material. In the fourteen years of its independent existence, Krupp Nirosta issued only ten important licenses. As a further restrictive measure, Krupp Nirosta refused to permit any licensee to export stainless steel except to Canada. After bringing the important American steel companies in as licensees, the company was able to supply Krupp and the German steel industry with valuable economic intelligence. Production reports were regularly transmitted to Germany. Thus the United States Steel Corporation continued to transmit to Krupp tonnage figures, including United States Government orders, until June 1941.

In addition Krupp representatives were permitted to visit American plants freely. Krupp Nirosta also kept the Essen home offices well informed as to the newest American developments in stainless steel and answered requests for information from Germany, often sending technical literature submitted by the licensee. On the other hand, Krupp, Essen, refused to make available to the American licensees certain processes to which they were entitled.

The patent policy of I. G. Farben has been dominated by the idea of securing adequate protection for its interests in all countries. All manner of processes and products have been patented in order that it might be able to threaten infringement suits on weaker or less well-informed parties and so to stifle competition. In 1932 I. G. Farben, through its subsidiary in the United States, General Aniline & Film Corp., was able to force Du Pont and Pharma Chemical Corp. to recognize its patent rights covering new fast dyes, which greatly strengthened its position in the foreign market. In the neutrals I. G. Farben also holds a prominent position owing to its patents. The Spanish chemical producer, Sociedad Electro-Quimica de Flix, is controlled by I. G. Farben and uses the latter's manufacturing processes. When transportation facilities between Germany and Spain were cut off by the occupation of France, I. G. Farben permitted its subsidiary in Spain, Unicolor S. A. to produce several patented products. In Portugal the firm of Sociedad de Anilinas, Ltda., manufactures Farben products. In Argentina the affiliated companies are Anilinas Alemanas, S. A., and "GECO," Compania Industrial e Comercial, S. A.; in Sweden, Arto A/B and Anilin Kompaniet A/B; in Switzerland, Teerfarben A. G., and other firms; there the I. G. Chemie, capitalized at $42,500,000, reaches out to all ends of the world; and in Turkey, the firm of "Turkanil" Sabre Atayolu ve Sirketi. By this wedding of capital and technical skill preserved through patents, I. G. Farben has become the most powerful chemical producer in the world and a tower of strength to the German war effort.

The Germans are aware that the ownership of patents leads to power and they have been building for the future by registering increasing numbers of patents in the neutrals. Between 1938 and 1944 the number of German patents registered in Sweden doubled (from 1,618 to 3,377). German patents granted in Portugal have increased rapidly in the last few years, while there have been reports of large registrations in Switzerland. Many of the patents belong to the most powerful German industrial organizations, for example, I. G.

Farben, Zeiss-Ikon, Bosch, Daimler-Benz, A. E. G., and Siemens. Through these patents the Germans have acquired assets in the neutrals in the form of royalties which very often are retained as a balance with the licensee. For example Schering, S. A., the Spanish branch of Schering, A. G., in December 1944 carried as an account receivable $300,000 for license fees, and this is only one of many such firms.

(d) Acquisition of foreign indebtedness by Germany

During the Civil War in Spain, Nazi Germany actively aided the Franco party by lending technical assistance and sending the so-called Condor Division. In this way Germany was able to test its new weapons in actual warfare. But Germany exacted payment from Fascist Spain and the latter reciprocated German military aid by sending the Blue Division to fight against Russia. A balancing of financial accounts showed that Spain was heavily indebted to Germany for civil-war aid. In November 1943 an agreement was reached wherein Spain admitted a debt of about $100,000,000. Several payments which were made outside the clearings made available to Germany at least $60,000,000 in free credits in Spain. In July 1944, the Spaniards still owed a balance of about $40,000,000. Exactly how the Germans disposed of the $60,000,000 is not known, but it seems probable that they used it to purchase Spanish property, to finance propaganda activities, to pay for goods, and to sustain the diplomatic service.

(e) German use of clearings

Under the Nazi regime the bulk of German foreign trade was carried on through clearing agreements. These stipulated that the importers paid the value of their purchases to their central bank which then used these payments to meet the claims of the exporters. Once Germany and another country agreed to conduct the trade between them in this way, there no longer was the necessity of providing foreign exchange in order to pay for the goods imported from the clearing partner. By the use of this system, the Nazis managed to procure vital war materials when their foreign exchange holdings would otherwise have been too small to pay for these imports.

Although Germany, because of its war needs, became the debtor of most of its trading partners, it was in a creditor position toward Sweden and Turkey at the end of the war. Since these German holdings are in the form of local currency, these funds may escape Allied control through being withdrawn and concealed.

Another device in manipulating foreign trade for the creation of hidden assets is the two-price system for German goods which the Nazis applied, for instance, in Spain and Sweden. The lower price was paid through the clearings while the higher price was retained in the books of the neutral importer. The difference accumulated to the account of the German exporter and became flight capital. Another method was for the entire payment to be deferred until after the war. This practice has been observed in Sweden. Other methods were to allow interest charges and patent fees to accumulate and to stock-pile goods in a neutral which were in transit for another neutral.

(f) Activities of foreign personnel abroad

German personnel abroad represents one of Germany's most intangible and, at the same time, most valuable assets. While title can be taken to tangible property, the technological, financial, or political experience assembled in the human brain evades control measures. It is entirely feasible for a skilled expert to go into hiding with his knowledge and to resume his activities at a later moment. Investigations conducted in this country at the time of seizure of Axis enterprises have shown the remarkable degree of technological cooperation between German employees of I. G. Farben in various countries. So great a part of engineering, chemical, and other industrial work is based on the cumulative experience of individuals, that control over tangible property can never be more than one part of the entire control system.

German personnel has been extremely active in the neutrals. Not only the diplomatic staff and the various propaganda and espionage agents but also large numbers of German technicians, managers, and administrators have been in key positions to observe and report any new developments in the neutral economies.

None of the neutrals is so dependent on German personnel as Spain, since there are few Spanish technical engineers capable of directing the installation and operation of industrial machinery. German technicians know Spanish trade secrets and in many cases control the policies of various companies. Notwithstanding a Spanish law limiting the employment of foreigners, German personnel continues to be firmly entrenched in Spanish industry. Most of the equipment recently purchased by Spain has come from Germany. Naturally German technicians supervised its installation and often remained as technical managers. But technicians are not the only Germans in Spain; managerial and administrative personnel abound. One has only to glance at a list of the directors of Spanish companies to realize the influential position of Germans, a large number of whom are fervent Nazis.

It is more difficult for the Germans to penetrate Swedish or Swiss industry through technical employment, yet it is feasible and dangerous. A Swiss law forbids the employment of foreigners so long as a Swiss national is available for the work, while Swedish manpower controls seem to make it doubtful whether a considerable number of German technicians could or can find employment in that country. On the other hand, Turkey, Argentina, and Portugal are more fertile fields. In Turkey, since its declaration of war, all Germans have been interned or repatriated. Once the wartime regulations are relaxed, however, they may very well attempt to return to their former positions in German-controlled firms, such as those engaged in banking, construction work, the manufacture of electrical equipment, machinery, chemicals and pharmaceuticals, and the processing of food. The number of Germans employed in Argentina before the latter's declaration of war was fairly large and strategically located in vital industries. So far the Argentine Government does not seem to have taken any steps toward eliminating German personnel.

There are no precise statistics available as to the number of German technicians, managers, and administrators employed in the neutrals. Spain undoubtedly has the largest number, perhaps a few

thousand. There have been about two or three hundred in Portugal; at least as many in Argentina; and a smaller number in Turkey, Sweden, and Switzerland. But the smallness of the numbers should not lead one to overlook the threat to Allied postwar plans. The activities of these Germans during the war have been a thorn in the side of the Allied war effort. A German shipping agent in Bilbao, Spain, sent reports on the movements of British shipping to Berlin for use in submarine warfare and even sent supplies to Germans besieged in the French ports. German technicians and other personnel have acted as Gestapo or military intelligence agents, keeping Germans resident abroad in line with Nazi doctrines. Others sent reports to Germany on Allied activities in the neutrals and on neutral economic, political, and military developments. In short, German personnel employed in neutral commerce, finance, and industry has served as a center of espionage and, unless kept under strict control, could become a means of perpetuating German influence in the occupation and postoccupation periods.

The importance of neutral nationals of German origin to the German war potential cannot be overstressed. In Spain, for example, the Lipperheide family, naturalized Spaniards, control large mineral interests, totaling millions of dollars, and throughout the war supplied Germany with essential ores and financial assistance. In Sweden, Otto Decker, a naturalized Swede, aided the Germans in their illicit gold operations; because of his wealth, Decker was of great value to the Germans. The Argentine national, Richard W. Staudt, never forgot his loyalty to Germany. He was one of the directors of the Argentine Nazi Party and a financial backer of the Nazi newspaper, El Pampero. Staudt also was a member of the German organization formed in Argentina to replace the diplomatic corps after the declaration of war by Argentina, where his good standing with the Argentine Army proved valuble to the Nazis. Finally, as a reward for his "aid to the Axis cause," Staudt received a personal decoration from Hitler. Staudt is many times a millionaire and he has interests, among others, in the local Siemens-Schuckert Co., numerous textile companies, and Staudt y Cia. with its many affiliates. Another prominent Argentine Nazi is Fernando Ellerhorst, a chartered accountant of German origin, who is associated with firms such as A. E. G., Robert Bosch S. A., Anilinas Alemanas S. A., Quimica Bayer, Osram, El Fenix, and a number of other German companies. This man uses his technical knowledge to evade Allied controls and is as dangerous to the Allied disarmament plans as Staudt.

(g) Acquisition of economic control to diminish the war potential of other countries

Activities affecting production.—A negative phase of the German war effort, which rivaled in importance the positive upbuilding of the German war potential, consisted in a series of acts by the Germans aimed first at preventing or curtailing the production of strategic and critical materials in the United Nations and secondly at monopolizing the flow of such commodities for the Axis powers to the exclusion of the Allies.

The sections above on the German acquisition of economic resources for the German war effort describe to what extent and through what techniques the Germans were able to obtain a major share of such

vital war materials as iron ore, wolfram, lead, machinery, ball-bearings, drugs, timber, and foodstuffs from the neutrals. Without these supplies Germany would have found it very difficult, if not impossible, to carry out its world-wide aggression. To the extent that the Allies were not able to obtain the commodities taken by Germany from the neutrals, the Allied war effort was held back or rendered more expensive in money, time, and lives than it otherwise would have been.

One method used by the Germans to forestall or hamper American output of war commodities was to make American firms dependent on German research and personnel. General Aniline & Film Corp., for example, relied completely upon the research done in Germany by I. G. Farben. Much important information was disclosed only to trusted General Aniline staff members while on visits to Germany. After the Alien Property Custodian changed the General Aniline management, the funds spent on basic research rose from $13,000 in 1941 to over $1,500,000 in 1944. In a similar fashion the Schering Corp. achieved research independence by spending in 1944 five times as much as it had in 1939 on research.

A second method was for German firms to use patents in such a way as to prevent or restrict American use and manufacture of strategic and critical commodities. A detailed study of this subject and of cartels is given in TIDC project 26, "German Participation in International Cartels," but some instances from both fields will bring out their importance in German economic warfare against the United Nations.

With the attack on Pearl Harbor, the United States not only was drawn into World War II but was also confronted with an unparalleled shortage in rubber and with huge military needs. Experts questioned our ability to wage war unless the supply were greatly increased in short order. No natural rubber could be obtained from the world's chief supply sources in the Far East. A synthetic rubber industry had to be created with the greatest possible speed despite inadequate techniques. The main reason for this grave situation was that I. G. Farben, under agreements with Standard Oil (New Jersey), had so skillfully withheld its buna rubber patents and technical information or "know-how" as to make the United States start almost from scratch in building up our synthetic rubber supply.

Everyone recognizes the indispensability of machine tools in wartime. The best cutting edge for such tools is made from tungsten carbide. But control of the tungsten carbide patents by Krupp and General Electric boosted prices and restricted its use so greatly that American manufacture of tungsten carbide was dangerously handicapped in attempting to meet war demands. Shortly before the outbreak of the present conflict Germany was estimated to be using twenty times as much tungsten carbide as the United States.

The American production of Diesel engines was so held back by patent agreements between Robert Bosch and American Bosch that the United States could not adequately meet the 1942 German submarine menace. Other patent agreements between German and American firms crippled American production (1) of magnesium, a key material for the aircraft industry; (2) of military optical instruments, indispensable to exact location of targets (and estimated in 1940 to be the fourth United States defense bottleneck); (3) of fuel-injection equipment for Diesel engines, desperately needed in large

supply in 1941 by the Navy and Air Forces; (4) of beryllium, a master alloy with copper; and numerous other war commodities, ranging from atabrine, a substitute for quinine, to tetracene, an important chemical compound used in priming machine guns, rifles, and pistols.

A third method was the use by the Germans of cartel agreements with American and foreign firms in such a way as to hamstring strategic industries outside Germany. The patent-restriction cases cited above are also examples of the cartel agreements which deliberately restricted non-German production of war materials. As illustrations of other aspects of German cartel manipulations, we may point out that the Germans succeeded in retarding the growth of the French aluminum industry to a rate less than double the output in the same period that German production increased fivefold. In the United States the international cartels in which German and American firms participated from the early 1920's on led to restrictions both of American productive capacity and American exports of synthetic nitrogen, aluminum, electric lamps, pharmaceuticals, plastics, chemicals, and numerous other items destined to affect adversely our war-waging capacity. Moreover, after the Nazi Government came into power in 1933, German membership in these cartels was extensively exploited (1) for German trade penetration, especially in Latin America, (2) for political propaganda through advertising, and (3) for collection and transmission of information about strategic industries in the United States, and elsewhere, for example, through Chemnyco, I. G. Farben's American espionage agency.

A fourth method utilized by the Germans for weakening the war potential of the United States and its Allies was through German ownership and control of firms outside Germany. In the United States these firms greatly aided the German Government, especially after 1933. Some, like the Transmares Corp., supplied Germany with vital raw materials for its war machine, overcame United States Government measures against the dumping of German goods on American markets, acquired foreign exchange in the form of American dollars with which to purchase war equipment for Germany, and conducted Nazi propaganda in support of American Fascist movements. Other German-American firms, such as General Aniline & Film, Schering, American Bosch, and Rohm & Haas, hampered American manufacturing of tar dyes, film, sulfa drugs, aircraft carburetors, and other strategic commodities through adherence to patent-licensing and other cartel restrictions. The negative phase of German economic warfare looms larger and larger as the retarding effects of the above four methods on the Allied war effort are more closely studied.

(h) German activities influencing political opinion abroad

With economic penetration goes political penetration, and the Nazis have not been slow in turning their business interests in the neutrals into propaganda agencies. The usual type of intelligence work was financed through the German Embassy or Legation, but business was frequently given a share in the work by appropriations. For example, the German-owned firm of Sociedade Zickermann S. A. R. L. of Lisbon periodically received sums of money to be used for intelligence operations. By entering the publications field the

Germans tapped a fertile field for Nazi propaganda. The official German news agency, D. N. B., and the Transocean Agency had offices in the neutrals and were engaged in Nazi news distribution. Newspapers have been purchased by the Germans to spread seeds of hate; travel and shipping agencies have done the same work in a more covert way. Often suppliers of German goods have been Germans with Nazi views whose business premises contained all the paraphernalia of Nazi propaganda and visual exhibits on the glories of the Nazi system.

German business interests in the neutrals have also been the source of the funds used in molding public political opinion abroad. Since many German firms in the neutrals are subsidiaries or affiliates of companies in the homeland, it has been very easy to use their profits in the neutrals for espionage and propaganda by crediting the parent company in Germany with Reichsmarks. By providing a cover for persons engaged in these activities, German businesses enabled them to hide under a cloak of innocence. Moreover, powerful German companies in the neutrals were in positions to apply economic sanctions against neutral firms showing anti-Nazi views.

D. German Techniques in Transferring of Capital

For some time the Germans have been preparing safe havens in neutral countries in case of defeat by laying plans for utilizing the territories of the neutral countries as bases for preserving Nazism and German economic strength in order to stage a future comeback. Long before the defeat of Germany intelligence reports reached this country indicating many such activities. One of these reports was of a meeting held in the summer of 1944 in Alsace and attended by a representative cross-section of German industrial corporation and Government officials. Among the points said to have been discussed were the export and investment of German capital abroad and the stimulation of closer working alliances between German and foreign industry. The industrialists were particularly urged to invest in foreign agricultural properties, and the names of several neutrals were cited who supposedly were ready to act in this matter on a five-percent commission basis. Previously, the German Government had opposed capital exports except for particular purposes, but when defeat became certain, encouragement of such exports became an official policy of the Nazi state.

1. THE CLOAKING DEVICE

The simplest method of evading the Allied control of German property is by cloaking. By this technique the German owner transfers his holdings to the name of a non-German national who acts as the nominal owner. These transfers can go on until the line of true ownership is completely obscured. In addition, local laws which limit or prohibit foreign ownership of certain industries are circumvented by the process. A large portion of the German property in the neutrals is cloaked, necessitating involved investigations to prove German ownership. Examples abound. After Turkey severed diplomatic relations with Germany, a Swiss semiofficial department, "Division Speciale du Consulat Suisse" was formed to protect German property in Turkey. An investigation has revealed that persons

interested in cloaking German assets in order to evade Turkish controls have been active in misusing this organization. It was also discovered that an official of the International Red Cross had been using his pouch to transfer German movable assets from Turkey to Switzerland.

A common practice in Europe is to use bearer shares as a token of ownership. This makes it very easy to cloak interests. There is strong evidence that the Spanish chemical manufacturer, Union Quimica del Norte de Espana, S. A., has a large German capital interest, but the president of the company denies this. Since the shares are issued to the bearer, only indirect methods of checking his statement could be used. Recent German flight capital to Sweden has been concealed by cloaks; by means of increased capitalizations of Swedish firms (technicalities of the Swedish corporate law have been cleverly used for cloaking purposes), by expansion of credit by German manufacturers to the extent of postponing payment until after the war, by the two-price system of imports, and by stock piling. Swiss cloaks for Germans are extremely active. Among the intervening banks are the leading commercial banks and such smaller but important private banking firms as Johann Wehrli & Co. H. Sturzenegger & Co. is wholly German owned and serves as a cloak for I. G. Farben. A large number of Swiss holding companies are known to be German cloaks.

2. GERMAN LOANS TO NEUTRALS

Another method of hiding German interests is through extending to neutral companies loans which are really masked investments. In the case of the Swedish shipping firm of Rederi A/B Skeppsbron, a German-guaranteed loan of some $3,000,000 was made from German supplies of free Swedish kronor whereby the vessels were mortgaged to the lender. In this way, although the Swedish company remained officially the owner of the vessels involved, the German Hamburg-American Line was the real owner.

3. DEALINGS IN LOOTED GOLD

The export of gold has been another device used by the Germans to create foreign assets. Admitted German prewar gold holdings were very low. Even adding to them the hidden gold holdings, largely derived from trade with Russia, legitimate total German gold holdings were well below what Germany exported in gold. The conclusion must be that the greater part of the exported gold came from German looting. The central banks of neutral countries must have been aware of this situation and cannot be absolved from having purchased from Germany looted gold, even though in the case of individual transactions the origin of the gold could seldom be established. Since the outbreak of the war, Switzerland has played the role of international banker for Germany and her satellites. Swiss banks, the leading commercial and private banks as well as the Swiss National Bank, purchased gold from Germany to a value of several hundred million dollars. The proceeds obtained from the sale of the gold provided Germany with the necessary Swiss francs (the only currency that is freely transferable in the world) to finance her purchases of critical war materials from the neutral countries outside the clearings

and barter agreements; to pay for espionage and propaganda activities abroad; and to invest in neutral industries. The German Reichsbank and Swiss commercial banks took part in transactions involving looted gold which was smuggled back and forth from other neutral countries in order to create an extra profit for the Nazi officials who handled the deals.

There is definite evidence that in Turkey prior to the declaration of war members of the German and satellite embassies constantly engaged in gold trafficking. Germans and their associates in Turkey bought Swiss francs on the black market with Turkish liras or Turkish pounds. The Swiss francs were converted by the Reichsbank through the Deutsche Bank, Istanbul, into gold coins. This gold was then sold on the Turkish black market for about 20 percent more Turkish liras than the trafficker had started with. This was a continuous process. Available records show that between July 24, 1943, and October 14, 1944, German banks in Istanbul sold gold to the value of about $12,000,000. During this period they purchased gold to the value of about $6,350,000. Almost all of this gold was either sold or bought for Turkish liras and Swiss francs.

Sweden, Spain, and Portugal were also the recipients of looted gold. The usual German procedure in the case of Sweden was to smuggle gold in through the diplomatic pouch and afterward sell it on the black market.

The proceeds from these sales were invested for prominent German businessmen and Nazi Party leaders in Swedish securities. The Bank of Portugal purchased large quantities of gold from the Swiss National Bank. There is clear evidence that some of this gold came from Germany and was derived from German looting, because it is known that gold ingots in large quantities with seals showing that they came from Germany were sold to gold and silversmiths in Portugal. If a Nazi desired to deposit his loot in Portugal, he shipped the gold from Germany to Switzerland, where it was sold to a Swiss bank against a check or draft in Swiss francs. The check or draft was sent to a Portuguese agent who deposited it in his own name with a Portuguese bank, while the real owner remained in Germany.

Another device was for the Germans to exchange looted gold for gold already located in the Western Hemisphere through the medium of a free currency such as Swiss francs. Gold was shipped to Switzerland and sold for free Swiss francs. With the Swiss francs, gold already in Argentina was purchased where it remained as a German asset.

4. ACQUISITION OF FOREIGN EXCHANGE

Through the sale of gold and other loot as well as through other devices as described above, the Germans accumulated foreign exchange and foreign banknotes in the neutrals. Further acquisitions of foreign exchange were made possible through the clearings by the export of goods with the assistance of the foreign authorities. Under the clearings system, a German paid Reichsmarks into the German Verrechnungskasse, and some neutral agency, for example, the Spanish Foreign Exchange Institute, then paid out pesetas on the Spanish end. In this way a German asset was created in a neutral country. Often goods were exported or smuggled from Germany for American, English, or French currencies. Swiss francs were especially desired by the

Germans because they were readily exchangeable for other currencies and demanded a premium. The Germans frequently insisted on that unit of exchange in return for the delivery of high priority war materials.

Assets in neutral currencies were also acquired by the delivery of German goods to neutral countries for which the entire or part payment was to be deferred until after the war, particularly goods of a high specific value such as diamonds and other jewels. During 1944 a junior official of the German Foreign Office is known to have visited Stockholm twice monthly in his capacity of German courier. He is stated to be the principal figure in the German Government's sale of Dutch diamonds in Sweden, and brought the stones with him in the diplomatic pouch on direct orders of the Nazi Government.

Once a deposit was made in a Swiss bank in Swiss francs, the Germans found it rather easy to make transfers to the Western Hemisphere by transferring a Swiss franc balance to the account of an Argentine bank, or by acquiring a peso balance with an Argentine bank through the sale of Swiss francs. Then transfers could be made to banks in other Latin American countries and in the United States from the Argentine bank. Since these accounts were usually cloaked, the protection afforded the real German owner was indeed great.

In addition, the neutrals have offered the Germans another opportunity for obtaining foreign exchange. Subsidiaries of German firms that are located in the neutrals by the use of cloaks have been able to ship goods, mainly chemicals and pharmaceuticals, to business associates in the Western Hemisphere, thereby acquiring an asset in a Latin American country at war with Germany. Cases have been observed of goods of German origin being shipped to neutral countries where they were disguised as neutral goods and reshipped to the Western Hemisphere.

5. DISPOSITION OF LOOTED ART

The salvage of European art treasures was of great importance owing to their intrinsic cultural and artistic value. But our major problem deals with their recovery and restitution to the legitimate owners since these art works have high marketable value and thus constitute a financial asset in the hands of the enemy.

The value to the Axis of looted property, including objects of art was recognized by the 44 nations assembled at the United Nations Monetary and Financial Conference at Bretton Woods, July 1, 1944, when they especially included such objects in resolution VI.

Experts agree that it is difficult to estimate the value of the art treasures looted by the Nazis as the value of art objects is extremely variable. This explains the wide range of figures quoted. The Ministry of Economic Warfare is said to have set the figure at $144,000,000, while Francis H. Taylor, director of the Metropolitan Museum of Art, reported that the Nazis had stolen European art treasures valued at $2 billion to $2.5 billion, which is more than the estimated value of all the works of art in the United States. A report received from Paris after hostilities ceased in Europe indicated that the Nazis may have stolen roughly one-fifth of the entire art treasures of the world. The amount of looted art, however, actually exported to neutral countries and the Western Hemisphere by Nazi officials is probably a small fraction of these total estimates.

There has been considerable difference in the German policy with regard to art in eastern and western occupied territories of Europe. In the eastern part, particularly Poland, the Germans apparently made a clean sweep of collections, both public and private. In the western countries, France, Belgium, and Holland, national museums were left comparatively intact while private collections owned by Jewish dealers and art collectors were confiscated outright. Such was the task, for instance, of the notorious Task Force Rosenberg in Paris.

Art treasures thus looted were to benefit the German Nation as a whole by being taken to national museums in the Reich, in particular the Fuehrer Museum at Linz, Austria, or else were acquired by high-ranking Nazis as a financial safeguard for the future. These high Nazi Party members had their teams of agents whose duty it was to look out for important works of art either in dealers' galleries or in private collections.

The Nazis were particularly interested in paintings by German, Dutch, and Flemish masters, but had little taste for modern French art except for its market value. This caused a brisk trade in second-rate "Germanic" paintings, many of which were imported from Switzerland in exchange for looted French paintings which had a far greater financial value by normal market rating.

As the Nazi policy in regard to the looting of art pieces was a long-range one, attempts were made to "legalize" this loot. Persons selling under duress were forced to sign sales certificates, and many looted works of art were made the object of a series of successive transactions designed to disguise their origin.

Art works from looted collections have been located in Spain, Sweden, and Switzerland, and in some cases the neutral governments concerned have agreed to "freeze" looted art treasures held by their nationals until such time as identification can be made by experts, and their owners traced.

In Switzerland traffic in looted art apparently reached large proportions, and it is believed that for the moment German-owned and looted art objects are lying in bank vaults, at forwarding agencies, in depositories or in private hands, either in German, Swiss, or other names. The total value of this type of asset is estimated at $29,000,000 to $46,000,000.

In Spain conclusive proof was found that Hermann Goering's agent, Alois Miedl, had brought into that country part of the valuable Goudstikker collection looted in Amsterdam, and was trying to dispose of it.

6. THE VOLUME OF GERMAN ASSETS ABROAD

General estimates.—Germany's foreign investments prior to World War I were estimated at the then current rate of exchange as about $6 to $7 billion. Two-thirds of this total was distributed over Europe. About two-thirds comprised holdings of foreign securities and one-third direct investments in private enterprises. After the war, most of Germany's foreign investments were liquidated or transferred in compliance with the terms of the Treaty of Versailles. By 1927 only $1.5 billion of the prewar investments remained. But between 1919 and 1928 new capital investments were made abroad so that the total may have reached about $2.5 billion. The old investments consisted

mainly of farmlands in South America and real estate and commercial enterprises in Central and Southeast Europe. The new investments consisted mainly of bank balances, accumulated profits, industrial plants, and interests in financial institutions. The figures cited here are based on published estimates and probably will have to be greatly increased as the various concealed German external assets are uncovered.

A preliminary detailed study of German assets outside Germany proper, excluding United States, United Kingdom, Canada, Italy, and Central and Eastern Europe, indicates, as of April 30, 1945, an estimated minimum value of $1.5 billion. This includes approximately $900,000,000 for the neutrals. At this time, however, information on all German assets, especially cloaked ones, is too limited to permit more than this very rough estimate.

E. Conclusions and Recommendations

A German external security program, properly designed in the light of the considerations which have been outlined, should be directed to certain well-defined objectives. It should be designed to—

(*a*) Prevent the evasion of the orders of the Allied Control Council in Germany, established to control its war-making power and capacity, by economic and political activities carried on outside Germany by Germans or their agents.

(*b*) Eliminate German economic and political penetration of areas outside Germany and prevent its restoration.

(*c*) Provide auxiliary controls of the supply of materials, products, and funds to Germany from the outside in accordance with the program of security from German aggression established by the Allied Control Council and its successor agencies.

The accomplishment of these objectives of an external security program will necessarily involve a concert of Allied or international effort on four vital subjects. The first is complete investigation and disclosure of German assets and activities outside Germany that affect security considerations and the maintenance of continued surveillance. The second is the treatment of existing German-owned or controlled assets located outside Germany and the creation of new assets in the future. The third is the treatment of German personnel now located outside Germany and the future movements of Germans to and from the outside world. The fourth is the handling of foreign trade and financial relationships between Germany and other countries.

In its "Preliminary United States Program for German Economic and Industrial Disarmament," which the FEA proposed on April 15, a preliminary outline of conclusions and recommendations was submitted to the interested Government agencies. It read as follows:

> The war-making power of Germany cannot be eliminated, nor can Germany repair the damage of war to the full extent of its power without serious restriction upon its economic relations with foreign countries.
>
> German economic activities in other countries, unless restrained, will result in German penetration of other economies, weakening both their will and their ability to participate fully in the maintenance of peace. German activities abroad will also be used to evade the controls to be placed upon Germany to eliminate its aggressive power and to insure the fullest feasible reparation by Germany.

The principal restrictions that should be placed on the external economic relations of Germany are:

(*a*) To regulate German foreign trade to prevent any export balance permitting German investment in other countries or the maintenance from Germany of German personnel or propaganda outside Germany.

(*b*) To regulate German exports to prevent the dependence of other countries on Germany for supplies vital to their defense.

(*c*) To regulate German imports where necessary to prevent the acquisition through imports of the means of developing a military potential.

(*d*) To eliminate German import-export duties as well as domestic or export subsidies except as a means of achieving the objectives of the economic policies of the United Nations toward Germany.

(*e*) To take over all assets outside Germany held by or on behalf of Germany or German nationals and to use and dispose of such assets for the reparation of war damage and in a manner preventing their subsequent restoration to German control.

(*f*) To prohibit the acquisition of assets outside Germany by Germany or German nationals until such time as the occupying powers feel that the will to or danger of use of such assets as bases for aggression no longer exists.

(*g*) To eliminate German influence over industry, commerce, or agriculture in other countries, whether exercised through cartels, patent arrangements, the employment of German personnel, or any other means, German firms shall be prohibited from participating in international cartels or other restrictive contracts or arrangements; existing German participations in such cartels or arrangements shall be promptly terminated.

(*h*) To prevent the maintenance in other countries on behalf of Germany of technical research or production prohibited within Germany.

(*i*) To prevent the maintenance in other countries on behalf of Germany of pan-German, antidemocratic propaganda or other activities inimical to international efforts to maintain peace and democratic institutions.

(*j*) To make the return of sovereignty to Germany conditional upon an undertaking by Germany to continue to conduct its international relations within these limitations.

Negotiations should be inaugurated to establish a United Nations Agency which will work in conjunction with the Reparations Commission and the Allied Control Council to accomplish the objectives set forth in subparagraphs (*e*), (*f*), (*h*), and (*i*). The Allied Control Council in its operations should make possible the execution of subparagraphs (*a*), (*b*), (*c*), (*d*), and (*g*).

This subsection will be devoted to a discussion of these proposals and certain additional ones as they have been developed in the intervening months.

1. THE NECESSITY FOR INTERNATIONAL AGREEMENT—THE NEED FOR A GERMAN EXTERNAL SECURITY COUNCIL

The four principal Allies, acting together in Germany, through the medium of the Allied Control Council and any successor body, will be able to effectuate programs of military disarmament, industrial

disarmament, scientific disarmament, and institutional disarmament insofar as action or a control of action inside Germany is required. But, to effectuate an effective external security program, which in itself is necessary as an auxiliary to controls inside Germany, a much broader area of international agreement and organization is necessary. Questions of national sovereignty are so intermingled with the entire problem that only through international agreement and action by many other countries can the objectives of the external security program be effectively attained.

German foreign assets include assets located not only in the four principal Allies who are members of the Control Council but also in the United Nations, neutral countries, and former German satellite powers. Within these countries the status of German assets will differ greatly. In some countries they will be the object of a reparation claim. In others they will be considered as an object of compensation for German indebtedness; in still others, German assets may be considered as subjects for nationalization of industrial or financial enterprises.

In all countries, however, the primary purpose in the treatment of these German assets should be the removal of Germany's base for aggression.

The division of German foreign assets among the greater powers into spheres of interest for reparation purposes set forth in the Berlin Protocol (see appendix G, sec. IV, pars. 8 and 9), does not remove the necessity for reaching an international agreement—if anything, it increases it. If no agreement is made, there would inevitably be a wide divergence in the treatment of assets and penetration problems with the certain result that the Germans would profit. They would seek to build their base on any weak points. A single weak point any place in the world outside Germany on this score presents a critical problem for world peace and security.

The same general problem is presented with regard to German technical and other personnel outside Germany. Again, a variety of attitudes and action in the nations, with no uniformity of standard or attitude, can be expected in the absence of international agreement. The end of the war found German nationals in varying numbers in almost every country of the world. It is inevitable that there will be movements of personnel in and out of Germany in the future. Wide variations in the treatment of this problem may also work against world security interests. Just one safehaven for German political agents of the Nazi regime or technical personnel engaged in research or production in fields importantly related to war may provide a very substantial source of danger or infection. Wide variations in the pattern of treatment will provide openings that hostile forces are bound to utilize.

Pressures exist to cause such variations in the absence of international agreement. The technical demands or sympathies for Germans of various types are stronger in some countries than others. Rules and regulations on repatriation or immigration may be considerably more lax in one country than another. Internal controls over the movements and activities of German nationals may range from strict to practically nonexistent, depending upon the degree of a particular country's participation in the war, and, in some cases, local administrative situations. Certain types of German nationals will

be retained or new ones welcomed because of peculiar personnel needs of a particular country. All of these variations make for a lack of uniformity and provide openings through which German nationals may conduct activities inimical to peace and security from renewed German aggression.

The handling of foreign trade and financial relationships between Germany and other countries presents still another aspect of the "external security" problem on which international agreement is desirable. As long as the Allied Control Council is in complete charge of Germany and there is no separate German Government, this problem may not be critical. However, after the establishment of German governmental machinery and the withdrawal of complete Allied control, the cooperation of the other nations with the Allies will be an important factor in policing Germany's foreign trade and financial relationships to see to it that they are not prosecuted so as to enable it to prepare for war. Left to their own desires, some countries might conclude cartel agreements with Germany, or sell it quantities of strategic imports, or lend it vast sums for unrestricted purposes which may involve foreign loans in a German war potential. Only international agreement primarily directed to security considerations will serve to support the Allied controls and avoid conscious or unconscious sabotage of the German security program by nations which may not feel directly responsible for it.

It follows, therefore, that there should be an international organization concerned with the German problem in the external field working coordinately with the Allied Control Council and any successor body in the internal field. This international organization should include not only representatives of the four occupying powers but of other United Nations in whose territories German assets, personnel, and economic activities are of substantial importance. Functioning primarily as a device for securing agreement and stimulating or coordinating action on various facets of the German external security problem, it could work under the aegis of the UNO or function separately. It need not be as formal an organization as the Allied Control Council, since it would not be administering occupation affairs and would have only limited administrative problems of a day-to-day nature. Its chief instruments of operation would be departments and agencies of the Governments concerned, holding powers of sanction and enforcement within their own territory. An external assets commission for the management, operation, and disposition of enemy enterprises and other assets in neutral countries in conjunction with the Allied Commission on Reparations and the Allied Control Council would be its principal international operating agency.

Hereinafter, for purposes of discussion, we shall refer to this body as the proposed United Nations German External Security Council.

Such a council would complement rather than duplicate the functions of the Allied Control Council, particularly where the Control Council's operations require the cooperation of sovereign powers other than the countries represented in the Council.

Many of the problems of external security, as indicated previously, will involve negotiations between the occupying powers and other governments. The choice of a formal organization to handle negotiations and agreements in this field as against a reliance upon the normal

diplomatic process is dictated by reasons of convenience and necessity. The reaching of common agreements by many nations on the problems of external security, outlined above, would be a slow and laborious task if sole reliance were placed upon the sporadic exchange of diplomatic notes or purely bilateral exchanges. What will be necessary is the repeated convening of duly qualified representatives of the countries concerned to consider ways and means of developing common agreement on the manifold and complicated issues. Only in that fashion can we overcome the hazard that would result from a lack of uniformity or common concern on this world security problem.

Furthermore, such a body provides a very convenient medium for correlating the control activities of the occupying powers within Germany and the other United Nations concerning German assets, personnel, and activities outside Germany.

After a year of careful observation of normal diplomatic processes in this complex and difficult field (which are summarized in TIDC project 25, ch. 3), it is our earnest conclusion that treatment and solution of this problem of external security demands a persistent attention that only an established agency of the type described could provide.

2. THE NECESSITY FOR ADEQUATE NATIONAL MACHINERY

Whether or not normal diplomatic process or a new Council is used, the solution of these problems presupposes integrated German security control agencies within each nation. International agreements on this subject will be meaningless unless there is adequate domestic machinery in each country to carry out a given program along agreed lines. These agencies would inform and advise their national representative on the international German External Security Council of the nature of the particular problem in their country and the measures they were prepared to exercise or make a matter of common agreement. Likewise, they would execute the program on which there was agreement, plus any additional ones which the national interest demands.

Indeed, German penetration is a serious domestic problem in many countries. In the United States, for example, we are especially concerned with internal security against resumption of forms of German aggression such as espionage, pan-German organizations or Nazi Bunds, and German propaganda; with actions of the Alien Property Custodian in disposing of former enemy property in this country on terms which will guarantee us against a renewed German penetration in critical industrial spheres; with the terms of disposition of foreign funds in the United States under the aegis of the Treasury Department; with legislation or Executive action looking to adequate protection from forms of economic warfare by the Germans practiced in this country before the war; with the repatriation or surveillance of German nationals in this country; with the prevention or control of the utilization of any German nationals who are industrial or scientific technicians in our important war plants or factories; with the making of private or public loans to Germany on conditions that would restrict their use for peaceful purposes; with trade with Germany; and a number of similar questions. All of these measures must be fitted into a coordinated national program. Logically, we cannot

urge or demand that other nations treat German interests in their territories in line with appropriate world security considerations without having the necessary program and machinery plus the will to deal with the problem of German penetration in our own country.

All of the foregoing points up a conclusion that the German external security problem is not solely one of dealing with the neutrals, important as that may be. This is a hang-over derived from the economic warfare period in which the belligerent nations were dealing with the nonbelligerent. German external security problems continue to exist in our own boundaries and those of our Allies just as they do among nations formally neutral. Certainly, the United States and its Allies will be in no position to demand effectively the adequate treatment of this problem between erstwhile neutral countries unless they can demonstrate at every turn that their own domestic efforts are equivalent to those being requested of the neutrals.

In Great Britain there is some evidence that governmental organizations, other than the foreign office, will concern themselves with this problem on the British home front. In France the Ministry of National Economy and Finance has set up a single unit to handle this problem in conjunction with security organizations of the French Government. It behooves all nations where German economic and political penetration has presented a problem to establish an adequate domestic policy and institutions responsible for its execution.

In the United States Government there is a substantial body of institutional machinery capable of dealing with this problem. The Treasury Department, the Department of Justice, the Office of the Alien Property Custodian, the War and Navy Departments, and the Department of State all are interested in one or another phase of German external security. The main domestic problem is to coordinate the activities of these various agencies so that they are pursuant to a defined program sufficiently protective of the security interest involved to justify our request to other powers to take similar action. The device of the high level interagency policy committee would be adequate provided an adequate secretariat for the committee was provided to coordinate the activities of the various agencies on a day-to-day or week-to-week basis. We are unable to state here whether or not similar or adequate national machinery, capable of executing such an international program, exists in the other United Nations.

The emphasis here on the necessity for creating adequate organizational and administrative machinery, both on the international and domestic levels, we believe, is not misplaced. The main problem in this field seems to be one of securing the establishment of a machinery necessary to the negotiation of agreement on the substantive program to be followed and its implementation throughout the world.

3. THE NEED FOR ADEQUATE INVESTIGATION OF EXTERNAL SECURITY

The problem of obtaining information concerning the detailed machinations of Germany in the outside world between the last two wars is of paramount importance. The disclosures which have been made up to now have served to awaken some to the nature and extent of the German conspiracy to penetrate and subvert the economies of prospective foes or hoped-for allies and to indicate the magnitude of the problem of German external security. But one of the great

difficulties in designing and pressing an external security program of international scope to acceptance is the absence of detailed information as to the actual plans and operations of Germans and their friends outside Germany concerning past or future German aggressions.

The various facts which have been recited in this section, or more fully in TIDC project No. 25, or in other official Government documents, represent only a fraction of information potentially available. Presumably much more could be found in areas outside Germany if adequate investigating personnel were employed by the countries concerned and the resulting information coordinated so that the national investigators of one country could profit from leads picked up by those of another.

But Germany itself, however, is the treasure house in which the major part of the investigative work should and must be done concerning the external security program. Within Germany will be found most of the institutions and persons, with their files, previously or hereafter concerned with the conduct of German economic and political penetration or other German operations outside Germany hostile to world security. Documents, which are always a major source of information, as well as witnesses in large numbers are to be found in Germany. The current war crimes trials indicate the way in which documentary evidence can convert rumor and myth into the reality of proven truth. Moreover, some of the obstacles to investigation outside Germany should not be present in Germany since Allied authority is a relatively absolute one over German property, which is not the case in neutral countries, for example. The only obstacles to external security investigations in Germany should be the minor ones of procedure regarding Allied cooperation in that endeavor.

It is difficult to think of an exhaustive investigation in this field by any number of investigators fewer than hundreds. That is because source material is so great. Even the complete and detailed exposure of the activities outside Germany of a single large German firm will require the painstaking efforts of several dozen investigators for a substantial period of time. This is particularly true if some of the individuals concerned are to be cross-examined and their stories checked regarding operations exposed by the files.

A happy combination of military authority and the cooperation of the civilian agencies in the provision of adequate personnel and resources are necessary to this investigation. The mere job of locating and seizing documents and finding witnesses presents a severe administrative problem. The training and provision of adequate personnel to make the use of these administrative files requires special attention by the interested or competent civilian agencies. Ideally the men would be chosen for their knowledge of the German security problem achieved by either study or training and especially for their expertness as directors of investigations.

The sum total of information concerning espionage and subversive activities abroad, and the like, cannot be found exclusively in the records and personnel of industrial corporations such as I. G. Farben, although, of course, no story on this subject is complete without an account of the operations of this and similar companies. Other information will be found in a variety of places—in records of government ministries, and noncommercial operations, police records, files of cultural organizations, party and labor group records, and the like.

Although the task of developing and maintaining an adequate investigating unit for this purpose will devolve upon each nation separately, appropriate arrangements for the coordination of the investigative work of the four occupying powers is of some considerable importance. This is necessary if only because the raw materials of investigation—witnesses, records, and the like—are likely to be spread over more than one zone. We know, moreover, that just as the problem of control of any corporation or activity cannot be confined to a single zone in Germany, the problem with respect to German activities outside Germany must likewise be viewed as a unit.

Investigations, complementary in their character, concerning the German external activities should be conducted concurrently outside that country. The various United States missions are already charged with this job, but a program of alerting the populations of these countries as well as inspiring activities to supply these missions constantly in an ever-increasing quantity with authentic information would be helpful. A close relation between the conduct of investigations abroad and those in Germany will be necessary when governments, for example, produce census information concerning German assets. The results might be checked within Germany, while the results of censuses of assets and personnel abroad made in Germany could likewise be checked in the appropriate area. But census information alone is only a part of the information needed to lay a proper foundation for the establishment and execution of an external security program. Identity of individuals, the determination of the true character of their activities, a knowledge of the extent and nature of activities in foreign countries directed from Germany now or hereafter—all these and more call for coordinated investigations on both sides of the German frontier.

This general problem of activating and coordinating investigations of German activities outside Germany between various Allies and between them and others in the United Nations and neutral category is fundamental to the establishment and maintenance of an intelligent and purposeful external security program. Unless this effort can be inspired now in the wake of the war before interest lags and the trails are lost, the old networks of penetration will stand ready to be used when the opportunity is offered. This activation and coordination of adequate investigation should be the first and foremost job of a United Nations German External Security Council and the national agencies on which it is based, as well as the Allied Control Council.

4. THE TREATMENT OF GERMAN FOREIGN ASSETS FROM THE STANDPOINT OF EXTERNAL SECURITY

Many of the United Nations have instituted systems for the seizure of German assets located within their borders and blocked their future disposition except pursuant to government authorization. At the urging of the Allies some of the neutrals have followed this example. (See TIDC report, project 25, ch. III, for a summary of developments up until the fall of 1945.) The future treatment of German foreign assets is one of the most important phases of an external security program. The future disposition of these assets should be handled so that the financial, economic, and industrial base of German economic and political penetration or evasion of Allied control is

eliminated. The future acquisition of assets by Germany or German nationals outside Germany, by the same token, should be carefully controlled so as to prevent the evasion of Allied control in Germany or the development of new bases of economic penetration in contravention of the interest of world security from German aggression.

By far the largest amount of German external assets consists of established investments. The problems raised by these established investments are far greater than those of loot.

These assets cover a great variety of both tangible and intangible property. They include securities, private and capital; bank deposits; foreign currencies and bills of exchange; gold and other precious metals; accounts receivable; other negotiable instruments; diamonds and other precious stones; stock piles of raw materials and finished and semifinished goods; land, plant, and equipment; works of art, books, and manuscripts. In addition to these forms of real and personal property there are various types of contractual relationships such as patent rights, trade-marks, copyrights, cartel agreements, insurance agreements, contracts with independent foreign sales agencies, special contracts with German-controlled foreign subsidiaries and affiliates, options, and mining rights.

A realistic policy regarding German assets in foreign countries should recognize the different positions of former Axis countries or satellites, neutral countries, late cobelligerents, like Turkey and Argentina, and other United Nations. In each case, an adequate solution of the German external assets problem must take into account the place of the country where the assets are located in World War II alinement. By recognizing at least three categories of foreign countries in which German assets are located, it is possible to avoid many dangers and difficulties. These three categories are—

(*a*) German assets in the United Nations.

(*b*) German assets in Austria, Italy, Hungary, Bulgaria, Rumania, and Finland.

(*c*) German property in the neutrals, Turkey and Argentina.

(*a*) *German assets in the United Nations*

The treatment of German assets in the United Nations could be handled advantageously by an international agreement worked out under the aegis of the proposed United Nations German External Security Council but administered by the National Government at the situs of the asset. Such an agreement would provide standards for the administration, liquidation, and disposition of these German assets in a manner compatible with the interests of external security. All of the Governments participating in the Council would agree to adhere to these standards and pledge themselves to eliminate the German ownership and control of the assets in their territories in any administration or disposition and erect the necessary safeguards against German repenetration along lines dangerous to security from renewed German aggression.

The administration or enforcement of this agreement would be the responsibility of each of the United Nations within its own territories. The result of this combination of measures would be to decentralize the administration and liquidation of German assets in the United Nations on a national basis but coordinate national action pursuant to security policies and principles agreed to at the international level.

It is believed that this arrangement will be the most practical one from the standpoint of administration, insofar as the United Nations are concerned, while offering an adequate measure of common security to each member of the United Nations family from a German economic base for aggression located in a neighboring country.

There is already some precedent for this approach to the problem in the resolutions adopted by the countries of North and South America at the Mexico City Conference in 1944, resolution VI adopted by the delegates at the United Nations Monetary and Financial Conference in July 1944, the declaration with respect to Axis acts of dispossession issued by certain of the United Nations on January 5, 1943, and the gold declaration issued simultaneously by certain of the United Nations February 2, 1944.

(b) German assets in former enemy or satellite areas

The treatment of German assets in Austria, Italy, Bulgaria, Rumania, Hungary, and Finland, countries which were allies or satellites of Germany, presents a sharply contrasting problem.

Regardless of the provision of the Berlin Protocol regarding the division of reparation shares in German assets in eastern Europe and western Europe, the Allies still have a joint interest in seeing to it that German economic penetration in other countries is eliminated. A complete severance of German ownership and control of assets in these areas is indispensable to this objective. Indeed, it is important not only to sequestrate these assets from their former German owner but also to assure their administration or disposition into hands that are not "cloaks" or "fronts" for German interests. The freeing of these countries from German economic domination cannot be accomplished in the absence of the achievement of this result. Austria is a striking example of this point. The validity and effectiveness of a separation of Austria from Germany and its attainment of a status of an independent state will depend upon the purging of German ownership and control of property in Austria and the erection of safeguards against any repenetration through the acquisition of important industrial, financial, or commercial interests by German nationals.

The disposition of these assets is not a subject of discussion here. Some may argue that German assets should be physically removed, insofar as it is feasible, from these satellite areas and used to satisfy reparation claims. Others may argue that convenience dictates the physical retention of some of the assets in the countries where they are presently located, with money or products delivered in lieu thereof. Finally, some of the countries in question may assert claims against Germany as a basis for retention in their own right.

Regardless of the ultimate decision on this range of issues, disarmament and security considerations dictate two important conditions. The first is that German industrial and scientific equipment specialized for the production of arms, ammunition, and implements of war (see sec. I) should not be maintained in these areas so as to perpetuate outside German borders the base of a German armament industry in either its production or scientific aspects. Second, the German ownership and control of all assets in these areas should be eliminated regardless of the identity of the recipient or the disposition of the proceeds.

That much at least all of the Allies are privileged to demand as a condition of peace between themselves and their former enemies or allies of their former enemy.

(c) German assets in the neutrals, Turkey and Argentina

By far the most important phase of this problem is the treatment of German assets in the neutral countries, Argentina and Turkey, which constitute approximately two-thirds of the world total now known.

The German assets in these countries should be placed at the disposal of or under the control of agents of the Allied Control Council in order to protect adequately the security and property interests of the Allies and reparation claimants. They are German property and the Allied Control Council has the legal right, if it wills, to reclaim this property as the successor authority to the German State. Morally, the profits from the operation of these assets or the proceeds from their eventual liquidation belong to the Control Council for the payment of reparation to the countries which have been despoiled by Germany. Already, the legal position outlined has been asserted by the members of the Allied Control Council in the form of a vesting decree.

The control of the administration and disposition of these German assets in the Allied Control Council should be exercised with security considerations as the primary concern. During the period of liquidation, when these assets must be administered, it will be important to make sure that industrial or scientific properties are not being used by Germans to violate the disarmament provisions which the Allied Control Council imposes internally in Germany. The making of arms, ammunition, and implements of war or the conduct of scientific research and development in this field by Germans outside Germany on the basis of property owned in the neutral countries is too dangerous to world security and should be prevented. The liquidation or disposition of these properties should be handled under terms, conditions, and arrangements which will prevent, insofar as it is possible, their return to the control of German nationals or their "cloaks" or agents. Nor should the German owners or their agents receive any compensation other than that which might be provided by German Government machinery to all owners of property made the subject of reparation. In that event, the compensation should be made available to the individuals concerned only on terms and conditions satisfactory to the finance control authorities in the Allied Control Council.

It must be anticipated that some of the neutral countries may object to this procedure on legal grounds, refusing to recognize the title of the Allied Control Council or its agents to German assets. Or the neutrals may assert local interests which they consider prior to Allied claims, such as German debts to their nationals. In weighing either the legal or moral validity of this position, should it be taken officially by the Governments of the neutrals, Turkey or Argentina, several factors should be recognized. There is some reason for believing that the Germans, fearing sequestration and seizure of their assets in neutral countries by the Allies, allowed debts to pile up against them. Also, the creditor position of citizens of neutral countries and of Turkey and Argentina is due in large part to direct assistance

rendered to the German war machine by making available excess exports, credits, transportation facilities, and technical assistance. To recognize as valid claims based on such aid to the enemy might greatly weaken the position of the Allied Control Council or its agents in securing the objectives of the disarmament and reparation programs. Moreover, these countries were warned officially by certain of the Allied Governments not to extend credits to Germany. But, by far the most important intangible is the obvious interest the Allies have in treating carefully the security aspects of the problem, a concern which in the light of the past it is not realistic to impute to the neutrals.

The administrative arrangements for the treatment of this problem in a manner consistent with Allied interest and consonant with the sovereignty of the countries concerned are discussed later. In the final analysis, the substantive treatment of the problem of German assets in the neutral countries, Turkey and Argentina, should be to seek and maintain the attributes of ownership and control sufficient to enable them to extirpate this economic base of German aggression. The attributes of ownership necessary to this objective must include these three:

(1) The effective power to investigate, with the freedom which anyone has in his own enterprise, in order to ascertain the facts with regard to the use of these assets in the past and their possible use in the future for enemy purposes.

(2) To ascertain the most effective practical means, all factors considered, of removing the possibility of such enemy use.

(3) The disposition of the properties in a form consistent with other Allied objectives.

(d) German Contractual Relationship Outside Germany

An additional comment is required on the substantive treatment of contractual relationships which may constitute German assets between the German concerns and others in the outside world.

Contractual relationships include insurance agreements, patent rights, trade-marks, copyrights, and selling and purchasing agreements. All of these must be divested of their German control so that they cannot be used in the future as instruments of aggression.

In all cases, insurance agreements with German companies should be canceled. The German reinsurance base must also be liquidated, since it was a most dangerous instrument of German penetration and espionage and has subordinated European insurance companies outside Germany to German domination.

The question of what should be done with German patents is of great importance. The ability to operate through patent control has been a powerful weapon in the German arsenal, serving to build up its war potential and to prevent the effective development of production facilities in the Allied Nations. Drastic steps are necessary to eradicate the effects of German misuse of this patent weapon. All technical information, whether patentable or not, originating in Germany, should be given for full disclosure and free use outside Germany. In addition, Germans should not be permitted to obtain foreign patents on their inventions or to acquire patents in other countries. In addition to these proposals, the cancellation of patent protection for German patents in external territories can and should be arranged

by international agreement. The right to patent protection in any area is a privilege granted by the government of that area. It rests solely upon the exercise of sovereignty by the jurisdiction where the patent rights are granted.

In neutral countries the appropriate authority of the occupying powers, the Allied Control Council, should take steps necessary to assert title to patent and patent applications as the successor in interest to the ownership of German external assets. It should use every effort to reduce such patents and patent applications to possession and control. No German resident should be permitted to sue or lend his name to the purpose of suing any Allied or neutral national for infringement of such foreign patents as may come under the possession or control of any authority of the occupying powers.

These measures are deemed necessary to free technology outside Germany from the carefully designed system of restraints which became a powerful weapon for disarming Germany's prospective opponents and assuring an industrial advantage for war.

The foregoing discussion has been devoted to the treatment of German assets abroad from the standpoint of external security. It has not attempted to analyze or dispose of other considerations such as reparation, public or private claims, or other factors which may involve German foreign assets. The conclusions and recommendations above have been based on the premise that external security is the prevailing consideration and that other legitimate interests such as the ones mentioned and the concept of national sovereignty can be taken into account and properly served, provided the importance of the elimination of German economic penetration in other countries dangerous to world security is recognized.

5. THE TREATMENT OF GERMAN PERSONNEL ABROAD FROM THE STANDPOINT OF EXTERNAL SECURITY

Many of the United Nations and neutrals have substantial numbers of German nationals within their borders. In addition, there are many Germans who have become citizens of other countries but whose conduct on behalf of Germany and the Nazis in World War II makes their new citizenship subject to cancellation and makes themselves the subject of either repatriation or some form of alien control. As indicated previously, the treatment of this German personnel is of great importance to an external security program. It should be emphasized here because, up to now, with the exception of the repatriation program in Eastern Europe projected by the Berlin Protocol, the problem has not been definitively treated.

Previous material in this section and in the Report on TIDC Project 25 has analyzed the various dangerous elements in this situation. The pivotal one is the past practice of the German government, in utilizing its nationals or former nationals abroad, wherever they could be prevailed upon through various pressures, to serve the interest of the State, as against the interest of their adopted locality. The extent to which this menace has been accentuated by the flight of Germans to neutral countries or elsewhere, cannot now be determined. In addition to the program of investigation and detection, previously discussed, certain additional conclusions and recommendations seem worthy of consideration.

All German nationals, including Germans who have become naturalized abroad, identified in any substantial way with the Nazi or pan-German activities, and possessing scientific skills, or fitted for responsible positions in government, journalism, education, banking, industry, commerce, transportation, or military pursuits, should forthwith be repatriated to Germany. Such persons, floating loose in the world, are dangerous to the welfare of the United Nations and should be returned to Germany where they can be treated under Allied control according to the prescribed rules and regulations. Germans naturalized in recent years should be subject to careful investigations by security authorities in each country to determine whether or not they are genuine refugees.

Persons of dual nationality—German and neutral—who have been closely allied with Nazi doctrines or the activities of the German State, should be subject to repatriation. Neutral nationals of German or non-German origin who have violated neutrality laws should be severely penalized. Many nationals of German origin, naturalized before 1939, have worked strenuously, particularly in the economic fields, in the neutral countries, Turkey and Argentina, against the United Nations, and strong penalties should be exacted of them through direct negotiation with the countries concerned. They have not only violated neutrality legislation governing the country which granted them their citizenship but have violated the oath of allegiance to their adopted country by trafficking with the agents of their former state.

Naturally, action of this character, involving a repatriation or the determination of a violation of the laws of the country of residence, must be handled under the laws of the country where the individual is located. A demand by the Allied Control Council for the repatriation of persons believed to be Germans whose presence abroad is considered inimical to security will have to be the subject of negotiation either between the Council and the countries in question or through normal diplomatic process. As in the case of assets, the most difficult problem will arise in connection with German personnel in the neutral countries where the governmental incentive to handle the problem may not be the same as that of a member of the United Nations family. Some firm agreement between the United Nations as to the orderly and effective handling of this problem would be most helpful in paving the way for a later negotiation between the Allies and the neutrals.

German technical, scientific, and managerial personnel presents a very special problem which is importantly related to the program of economic and industrial disarmament. In some neutral countries, such as Spain, German personnel exerted wide influence in industry through technical knowledge and managerial skills. It does not seem wholly adequate to rely upon the repatriation of known Nazis or persons who acted on behalf of the German State as a complete solution of this problem. Such a measure does serve to eliminate, perhaps, the most menacing aspect of the problem. However, some supplementary controls to limit the employment or use of this personnel in activities they would not be permitted to pursue were they in Germany deserves careful consideration. Regrettably, of course, the right of innocent Germans to engage in unrestricted scientific or industrial operations outside Germany may have to be curtailed for some time because of security considerations.

The same general problem arises in connection with the future migration of German personnel. Clearly known Nazis or espionage agents or all others who by reason of their previous record are considered dangerous should not be allowed the normal rights of exit from Germany and entrance to the outside world. Moreover, the restrictions on movements of scientific personnel, described in Section III of this Report, are also an appropriate part of the external security program.

These and other special problems cannot be developed in detail here. They must remain for a considered examination by representatives of the various nations at some forum such as has been suggested in the form of the United Nations German External Security Council. Out of careful deliberations by the various countries on the basis of adequate investigation of the activities of the German personnel abroad, a realistic and definitive program can be developed for international agreement.

6. THE TREATMENT OF GERMAN FOREIGN TRADE AND INTERNATIONAL FINANCIAL TRANSACTIONS FROM THE STANDPOINT OF EXTERNAL SECURITY

In the industrial disarmament program (see sec. II) several features of the external security program involving foreign trade have been developed. The first was the elimination or curtailment of German exports of certain selected products to prevent the renewed dependence of other countries on Germany for supplies vital to their defense and to rid them of German industrial domination in industries important for war. The second is the regulation of German imports where necessary to prevent the acquisition of materials or products in types or quantities necessary to the development of German self-sufficiency for war.

In the institutional disarmament program, the elimination and prohibition of German participation in international cartels or other similar restrictive contracts or arrangements also has been developed. (See sec. IV.)

It should be emphasized that the successful execution of these features of the disarmament program cannot be executed without the cooperation of nations other than the occupying powers. Indeed, the restrictions on certain selected German exports designed to free the countries of Europe from German industrial domination in industrial categories important for war will be unavailing in the end unless these countries develop their own or alternative sources of supply. Likewise, the exercise of important controls, through border patrols or other arrangements at points of entry in Germany, will be difficult to maintain effectively without cooperation of countries other than the occupying powers, particularly those which border on Germany.

These and other measures of external security in the field of foreign trade and international financial transactions will require international agreement through the proposed United Nations German External Security Council and separate arrangements with the neutrals if the greatest measure of security in this field is to be obtained.

The problem of external security in the field of foreign trade and international financial transactions will become most acute after the period of full-scale occupation and control. The provisions of the

Berlin Protocol (par. 15–D, of the section on Germany) prescribes Allied controls upon the German economy to the extent necessary—

to control German industry and all economic and financial international transactions, including exports and imports, with the aim of preventing Germany from developing a war potential and of achieving the other objectives named herein.

The execution of this provision in the occupation period implies such a substantial degree of Allied control over German foreign trade and international financial transactions that the problem of external security in this field will reach its most serious phase at the end of the period of occupation and control.

However, certain substantive objectives of this strict Allied control in the occupation period should be mentioned here. The administration of the export and import control system should be designed to sever the direct dealings between the Germans and their former commercial allies outside Germany until Allied programs for denazification, dissolution of domestic and international cartels, and the control of German assets abroad have been established. Every effort should be made to avoid the perpetuation or reestablishment of old trade patterns and relationships that are hostile to Allied interest. The old German tariff system should be suspended and all of the machinery of economic autarchy employed by the Germans should be eliminated both because it will not be necessary in view of the direct control by the Allies and because its redevelopment in the post-occupation period in any guise is to be deplored.

A full and detailed description of the various alternative methods of handling this control of German foreign trade in the occupation period is contained in TIDC Report No. 20/27.

Coming to the post-occupation period in which the problem of external security in the field of foreign trade and international finance will be most serious, it is submitted that some form of Allied control of German foreign trade through a permanent disarmament commission, acting in cooperation with a body more representative of the United Nations, will be necessary if disarmament is to be effectively maintained.

The Allied controls should include the prohibition of the importation of certain items and limitation of others to estimated peacetime requirements (see sec. II, subsec. B and D for details), and a control over the export and import of capital. In addition, some provisions must be made either in the peace treaty or in separate agreements for the establishment and continuance of liberal and multilateral trade policies designed to prevent Germany's relapse into the practice of economic autarchy. Certain comments upon these three measures common to the external security and industrial disarmament programs follow:

(*a*) *Import control*

Import control of strategic commodities might be secured through any one of four methods or a combination of them:

(1) Allied inspection at German ports of entry;

(2) Convention among exporting countries according to which authorities would agree to limit exports of a specified commodity to Germany;

(3) An international license system for specified German imports administered by the appropriate Allied authority, and

(4) Surveillance of foreign trade records by the appropriate Alllied authority.

The first type of control would involve almost complete and constant inspection at all ports of entry and the maintenance of a staff of Allied inspectors in Germany. An important auxiliary for this control would be the establishment of adequate working relationships between the Allied authorities and the exporting countries whereby the stoppage of excess imports beyond determined peacetime requirements would be handled in a fashion satisfactory to both the exporting powers and the Allied authority.

The second and third methods would be effective only if agreed to by all exporting countries under arrangements negotiated at the proposed United Nations German External Security Council or some equivalent body. These two methods would be most useful for a few commodities which are exported from a small number of countries in sympathy with Allied objectives.

The fourth method, continuous surveillance of German import and export statistics, should be followed regardless of the combination of the foregoing methods employed. The German governmental machinery should assume the responsibility of reporting to the post-occupation Allied authority all imports of selected strategic commodities. Export statistics of these commodities from other countries to Germany could be checked against the import statistics. The success of this method in the last analysis would depend upon the good faith of the exporting countries in reporting accurate statistics.

Indeed, the successful limitation of selected imports, by any of the methods discussed, will depend either on the full cooperation of all exporting and reexporting countries as well as Germany or upon customs inspection by Allied authorities.

(*b*) *Limitation on export or import of capital*

Exports and imports of capital to Germany must be controlled if the external security program is to be maintained. It will be necessary to prevent the use of German funds abroad for political espionage, the reacquisition of German economic domination in a particular area, or the conduct of activities forbidden in Germany. For example, the development of industries not permitted in Germany and their use as centers of research should be avoided. Any export of capital, therefore, should be forbidden beyond short-term working capital requirements for approved commercial purposes unless specifically allowed by the postoccupation Allied authority. Imports of capital, except as screened by the Allied agencies should be controlled in order to assure that financial resources thus acquired are not used for the development or expansion of industries important for war.

(*c*) *Liberalization of German foreign trade*

The future development of German foreign trade under liberal commercial policies, except where specifically limited by the post-occupation Allied authorities, is definitely in the interest of the disarmament objective. Whereas it is possible for a nation to prepare for war by expanding its international trade, as well as by following autarchic policies, in the final analysis a nation which does not possess sufficient amounts of strategic materials is not in a strong position for

prolonged war unless it has drawn other countries into its orbit. If, under liberal multilateral trade policies, the future German economy can be redirected toward efficient peaceful industries and made dependent on a wide range of markets for exports and upon many sources of supply for imports, the threat of a future war potential will be greatly lessened if not entirely dissipated.

It is now a matter of history that Germany used foreign trade as an important instrument of war. Under centralized control, imports and exports were skillfully manipulated by a series of complicated devices in order to obtain imports of strategic materials for current or future production of armaments and to dominate the economies of the satellites, particularly neighboring countries in which Germany needed to develop additional sources of supply. Although controlled foreign trade was only one of the means whereby Germany built her war machine, Germany would not have been able to prepare for war within so short a time if liberal and traditional trading procedures had been in effect.

It is anticipated that before the Allies have withdrawn from occupation, private foreign trade will have been established, and that liberal, multilateral commercial policies will have been inaugurated. Specifically such policies include (1) the adoption of unconditional most-favored-nation treatment in commercial treaties or agreements in place of discriminatory bilateral agreements, (2) the use of moderate tariffs in place of quantitative controls, (3) the temporary use of subsidies if necessary for new industries rather than high protection, and (4) foreign exchange procedures which conform to the standards of the proposed international monetary fund.

These provisions could be written into the treaty with Germany. If they are not, there is danger that as a sovereign nation, Germany may revert to her former pattern of trade and financial controls. If they are, however, there is danger that the imposition of such liberal measures would be considered a penalty to be abandoned as soon as politically possible. As an alternative, separate bilateral or multilateral agreements to continue these trade and monetary policies could be negotiated between the Allies and Germany without Germany being subject to duress or differential treatment.

If it be made clear that conformance with accepted liberal standards will be one of the prerequisites of membership in the United Nations Organization and its subordinate economic agencies, and if membership in these organizations be considered highly beneficial, there would be an additional incentive for Germany to maintain such policies. Until admission to the United Nations Organization, however, the Allies must continue vigilance over Germany's foreign trade, and concerted action to enforce the measures, vital to the external security program, must be assured.

7. THE TREATMENT OF NEUTRALS

By far the most difficult phase of the external security problem concerns the treatment of the neutrals and late co-belligerents with the Allied cause, such as Turkey and Argentina. German economic penetration and influence was strong in these countries until the end of the war was imminent. This fact, coupled with the known sympathies of many individuals and groups in these countries with the

German Nazi cause, creates a set of intangibles that must be faced realistically in projecting the external security program.

Questions of national sovereignty of the powers in question are intermingled with the legitimate security and reparation interests of the Allies and the United Nations. A satisfactory solution of the problem is not likely to emerge except through the most intensive and diplomatic negotiations, painstaking care on the part of the Allies and United Nations to respect the legitimate and appropriate incidents of sovereignty, and, in turn, the most understanding willingness of the neutrals, Argentina and Turkey, to accommodate their national interests to the international stake in security from future German aggression.

The first phase of the problem, necessarily a preliminary one, was the effort of certain of the Allies to secure the blocking and freezing of German assets in these countries and the undertaking of a census of German assets. For nearly a year the United States and the United Kingdom have endeavored, through diplomatic negotiations and trade agreements, to obtain commitments from these countries to this preliminary step on the important asset problem. An account of the development of this preliminary arrangement with the neutrals is contained in chapter III of TIDC project 25.

Much remains to be done and, in particular, the following:

(*a*) To obtain from the countries in question information concerning the identity and location of German assets within their territories and any other information bearing upon German economic and political penetration.

(*b*) To obtain an agreement from the governments of the countries in question on the substantive provisions of an external security program in which they are willing to cooperate with the Allies and the United Nations.

(*c*) To obtain an agreement from the governments of the countries in question concerning the administrative arrangements which they will permit to be followed by the Allied Control Council or its agents within their territory in connection with the treatment of German assets and personnel.

(*d*) To obtain their agreement concerning foreign trade arrangements between the export and import control authority for Germany and nationals of their respective territories, including any further exchange of a financial character.

While a number of difficulties can be envisaged in the consummation and execution of agreements on the subject matter discussed above, the problem of the administration and disposition of German assets in the countries in question presents by far the most pressing and critical question.

The Allied Control Council through a vesting decree has asserted title to and control over these assets. Other sources of legal claim de facto or de jure are available and should be employed. But, in the final analysis, the substantive and administrative questions surrounding the disposition of German assets in the neutral countries are likely to be settled by international agreement with the countries where the property is located. Agreement on this subject on the broadest possible basis providing for joint action by the Allies and the neutral country in question promises the most effective results.

It is the conclusion of this report that the administration and disposition of German assets in the countries in question is not likely to be consummated in accordance with the full interests of security except through the operations of a German External Assets Commission, acting as an agent of the members of the Control Council concerned and possessed of a substantial authority and operating control of these assets in the neutral countries. This position, taken in the FEA proposed preliminary United States program of April 15, referred to earlier, seems to have been reaffirmed by recent events.

This position need not involve any violation of the sovereignty of the nations in which the assets are located, provided a reasonable working cooperation can be developed. Elements in this cooperation would involve the recognition of the External Assets Commission as the appropriate and legitimate successor to the title and interest in the properties of the German government or German nationals. On the other hand, the agents of the External Assets Commission can conduct their operations so as to take into account any appropriate local interests or procedures, so long as they do not involve a compromise of Allied security objectives.

Once the title and control of the property is recognized by the neutral authorities, it can be classified and treated as—

(*a*) Useful for transfer for Allied purposes;

(*b*) Useful for operation on a temporary basis;

(*c*) Subject to destruction as a dangerous weapon of possible future aggression;

(*d*) Subject to liquidation for reparation account.

The conduct of actual operations will call for a substantial and carefully chosen staff of legal, industrial, accounting, and financial experts with some engineering and managerial assistance. For example, for those industrial plants which are to be operated, receivers will have to be appointed and, for the others, competent liquidators. Such a staff, recruited from the particular occupying powers who are responsible for the operations of the Commission in a particular area, would be largely operating in character, comparable in their status to the personnel of the United States Commercial Corporation or other typical Government corporations operating abroad. Policy relationships between the Commission and the neutral countries could be worked out either by the Commission or through the normal diplomatic arrangements.

The technical and operational aspects of this program are of grave importance. It will not be enough to rely upon general arrangements through diplomatic negotiations regarding the administration and liquidation of these properties, unless there are operational staffs on hand to effectuate these arrangements. Every precaution must be taken to see that the property is disposed of in such a manner as to prevent the likelihood of its return to the hands of the Germans or their cloaks.

To accomplish this objective, extensive investigation within the enterprise by Allied representatives and full information concerning the character and record of would-be purchasers will be necessary. Reliance on representation of local authorities, in certain countries or cases, might not be sufficient guarantee of freedom from German relationship. Guarantees will have to be devised, which will vary

from business to business, against the resumption of relations with Germans or persons acting in the German cause; operating arrangements must be developed for gearing the supplying, servicing and other commercial aspects of a particular asset to a non-German interest. For all of these purposes, a competent technical and operating staff will be required.

Should any of the countries concerned prove completely unwilling to cooperate with the Allies and their Control Council in this endeavor, it will become necessary to face squarely the alternatives. One is to back down and permit German interests to survive or flourish in the country in question; the other is to apply sanctions designed to induce a more reasonable attitude on the part of the government in question. Being concerned with the suppression of the seeds of a future war, the problem must be treated as one of economic warfare requiring both speed and aggressiveness. For these reasons it will be unfortunate if devices in the nature of sanctions such as the proclaimed list or export controls are completely relinquished until new and better devices are substituted.

Because of the potential importance of this topic, some of the new instruments which might be utilized are suggested.

The occupation of Germany greatly strengthens the position of the United Nations vis-à-vis the neutrals in regard to the external security program. By controlling German foreign trade the United Nations can exert a powerful influence on neutral opinion. Although some neutrals like Switzerland and Sweden undoubtedly have built up stock piles of essential imports, any cutting off of supplies for a long period should be an effective weapon. In 1943 and 1944 Switzerland and Sweden relied heavily on German coal to maintain industrial production and employment. During the same period Spain found German machinery and equipment necessary for her heavy industries. The lack of this material would greatly hinder her industrial development. Portugal, Turkey, and Argentina are less vulnerable to attack along these lines.

During the occupation period world opinion must be prepared for a new view of international law. This should be based on the illegal manner in which the Nazis waged total war and should aim for a collective security founded in part on control of German loot and other German-owned property. In the neutrals, Argentina and Turkey, an educational campaign should be instituted by Allied authorities to show that these countries are directly threatened by the presence of German investments and Nazi personnel, usually the spearhead of fifth-column activities. By citing the cases of Norway, the Netherlands, and Belgium, neutral public opinion and that of Turkey and Argentina can be brought to realize the dangers that German economic penetration holds for their own security.

Under its proposed set-up, the International Bank for Reconstruction and Development does not have any neutral shareholders, nor has Argentina or Turkey been offered membership so far. The bank will grant loans only to members. Certainly, at least as far as the financially weaker neutrals are concerned, any attempt on their part to gain admission will provide the Allies with a means of exerting pressure to force them in line on safe haven matters. More important, however, may become their desire to join the bank in order to partici-

pate in the exercise of the great financial influence which this institution is bound to hold in the future. Countries like Sweden and Switzerland may not be able to afford to remain outside the developments of world finance. Regardless of the motive for the application of the neutral countries for admittance to membership, it can be safely expected that the present members of the International Bank will have in their hands a strong weapon for the enforcement of Bretton Woods resolution regarding safe haven or related external security objectives.

Similarly, any direct loans from the United States to any neutral in the financing of imports or of development projects from private or public sources to private or public applicants in neutral countries will be another weapon for the enforcement of external security objectives. While this may be effective only toward financially weaker neutrals, under present conditions this weapon is all the stronger since there are few potential sources of foreign credits outside the International Bank or the United States.

The pro-German private interests in the neutrals can be embarrassed by the retention of the proclaimed and statutory lists and consignee controls during the Allied occupation period. Wherever the activities of these private interests are of vital economic importance to the nation, the neutral government may be induced to cooperate with United Nations' attempts to control enemy assets in its territory.

Another element is that of pressure on foreign subsidiaries through Allied operations in Germany. Once the parent company is under Allied control in Germany, pressure can be put on German subsidiaries and affiliates. Financial support can be withdrawn, shipments of goods and plans withheld, and the renewal of patents and technical assistance refused. When such actions put the subsidiary in financial difficulties, foreign investors in that company will realize that it would be more profitable for them to have the subsidiary firm obey the orders of the home office.

It is to be hoped that this range of consideration will not be important in the ultimate solution of the external security problem. Understanding cooperation by the neutrals, Argentina and Turkey, in the Allied efforts to prevent another German war is a small price for them to pay in the light of comparative sacrifices of the Allied and United Nations in the last 5 years.

Section VI

THE ATOMIC BOMB AND ITS IMPLICATIONS FOR GERMAN DISARMAMENT

The secrecy surrounding the development of the atomic bomb made it impracticable to conduct a special study project on its control in Germany in conjunction with a series of study projects of German disarmament inaugurated by the FEA Enemy Branch last January. Furthermore, the control of the exploitation of nuclear energy for military purposes is under extensive consideration elsewhere. Under these circumstances, this report will not attempt to provide exhaustive recommendations on the subject.

It is appropriate, however, to call attention to the reports in the TIDC series on the control of scientific research for war purposes. They provide some useful background for a consideration of the control of nuclear energy. The TIDC report on project 3 (The Post-Surrender Treatment of German Scientific Engineering and Research from the Standpoint of International Security) was prepared at the request of the FEA by the Office of Scientific Research and Development through a special panel of scientists established by Dr. Vannevar Bush for that purpose. Project 4 (The Post-Surrender Treatment of German Engineering and Research in the Secret Weapon Field) was prepared by the ad hoc committee established by the War and Navy Departments to handle TIDC projects 1, 2, and 4. The recommendations of these reports and other observations available to the FEA Enemy Branch are reflected in this report, particularly, Section III which sets forth a Scientific Disarmament Program for Germany.

While not attempting to deal definitively with the atomic bomb problem, it seems appropriate here to consider briefly two questions:

(*a*) Whether any additions to the specific measures proposed previously in this report are necessary in the light of the atomic bomb discovery; and

(*b*) Whether the atomic bomb so changes the strategic situation as to invalidate the FEA disarmament program for Germany previously recommended or serves to strengthen the case for that type of program as an essential element in the structure of world peace.

It does not appear that any radical additions to the program already proposed are necessary immediately in order to back up a prevention of the exploitation of nuclear energy in Germany. A careful administration of the military disarmament program, scientific disarmament program, and the industrial disarmament program will serve adequately to prevent such a disastrous development in the near future. The pattern of our own experience suggests that existing industries of a normal civilian character cannot be readily converted to this purpose. Hence, the creation of new plant and equipment is likely to be necessary for a development in the present state of the art. Nor is it likely that the production of atomic bombs in Germany could be effectively

managed without additional scientific research and development of a substantial character. Both of these steps and the importation of radioactive raw materials would be prevented by an effective administration of the general program proposed.

However, the rate of scientific development in this field may soon require special controls of types of equipment and facilities known to be adapted for the manufacture of atomic bombs. This may be particularly true in a country such as Germany where the existence of large scale chemical and electrical engineering industries provides a base of industrial plant and experience which is important in such an enterprise. Likewise, special controls having to do with research in the field of nuclear energy, imports of radioactive raw materials, and the exploitation of any local resources deserve an examination by experts before this phase of the program can be considered complete.

Therefore, it is recommended that—

1. Special field investigations of the German chemical industries and the German common components industries (which this report has recommended previously) be directed to take into particular account the importance of these industries for the exploitation of nuclear energy and to recommend any special controls deemed necessary and feasible in these industries to prevent the development of the industrial plant required.

2. The panels of experts chosen to develop recommendations for international controls of the exploitation of nuclear energy be directed specifically to prepare special reports on this subject concerning the enemy areas, including Germany, and to transmit, through appropriate channels, their findings on this aspect of the problem to the Allied control authorities.

The question of whether or not our previous recommendations on German economic and industrial disarmament are invalidated or strengthened by the discovery and use of the atomic bomb requires further comment.

The discovery of the atomic bomb has made it absolutely and imperatively necessary to undertake and execute a disarmament program designed to control Germany's power and capacity to make war. The Allies and members of the United Nations are exerting their energies to develop international controls of this terrible weapon to prevent its use by previously peacefully inclined peoples. Surely, under these circumstances, no one will question the necessity of instituting and maintaining a system of international controls in Germany adequate to prevent the development and use of this weapon either by the state or small groups bent upon revenge or a revival of their mad dreams of conquest and destruction. Germany has the scientific know-how and industrial resources which eventually could achieve such a development and couple it with their improved V-weapons to blitz or bluff the world into subjection. The atomic bomb serves to demonstrate convincingly that industrial and scientific power and military potential are the same. Control of one implies a control of the other. Finally, the atomic bomb points clearly to the futility of a security system for Germany that functions outside the borders of that country without internal controls.

In this connection it seems fitting to hark back to some of the earliest suggestions in the FEA interim report of January 10, 1945, regarding the necessity for the establishment of an adequate international

inspectorate inside Germany, international controls of imports into Germany or the production of items of war or the construction of warlike facilities in that country, and the utilization of international powers to punish German violators of the rules of disarmament. Surely these proposals cannot now be labeled impractical because they constitute departure from the old principles of national sovereignty and treaty making.

Nor is it any longer logical to argue, on the assumption of an early withdrawal from a Germany left in chaos and destruction, for a program limited to a widespread removal or destruction of German industry without reference to the establishment and maintenance of a permanent and stable system of controls.

The atomic bomb makes imperative both the sharp reduction and continued international control of Germany's industrial power and capacity to make war. Following the reduction of its disproportionate war-making power by the removal of selected plant and facilities, we must maintain a system of controls administered by the Allies and supported by the full weight of international organizations which may be charged with responsibilities for peace and security. All of the vital and necessary paraphernalia of control must be erected, not for any short-term use, but until the nations of the earth can feel that it is reasonably safe to leave it to Germans to make their own decisions for peace or war. That time, we predict, cannot be measured in years but in decades.

Moreover, the development of the uses of atomic energy is at its beginning. What is known about nuclear fission is far less than remains to be discovered, especially in the field of practical application. As yet judgments on this subject are only a product of more or less informed fantasy. One thing is clear, that fantasy is likely in this case to be outstripped by the reality and that the stability of so-called stable elements is closer to being shaken than ever before. If the time finally arrives when common materials can be readily converted into atomic explosives, the war-making importance of the modern industrial complex through which alone that can come about will finally become transparently clear even to the man in the street.

The development of the atomic bomb thus makes more imperative than ever the imposition of systematic disarmament constraints on Germany, whose industrial potential is seen, in the glare of Hiroshima, to be an equivalent of military potential.

In the wonder excited by the triumph at Hiroshima of the scientific laboratory, public opinion has rather turned a blind eye to the other cardinal condition of that achievement, namely, the gigantic industrial resources and skill needed to bring a Manhattan Project to fruition. The processes by which the atomic bomb was mobilized for war differed in no essential from those by which less revolutionary weapons came into the field. Like them it had its origin in the scientific laboratory, but Hiroshima only became possible when the scientific idea had been rendered practically available through the industrial process which is a common component of all war making.

It will be said that the atomic bomb makes obsolete the weapons of the past and that if only German progress in military application of nuclear research be controlled we need not cumber ourselves with elaborate disarmament programs. The disarmament programs are not designed to prevent merely the making of the weapons of

yesterday but to control at their nuclear center the means of making war. Even if conventional implements of war had become obsolete, the controls recommended in the present report would still offer the only effective hope of preventing the Germans from finding within the atom practical means of world conquest.

Every war has taught that it is the resourceful and effective synchronization of the use of old weapons with the new that brings victory. Hence, it is far too early to assume that any weapon or class of weapon before useful has been rendered unimportant by the discovery of the atomic bomb. The use of aircraft has revolutionized war; but it has not put sea or land weapons out of date.

Indeed, upon adequate reflection, it is not likely to be urged seriously that the outlawing of the development and use of atomic bombs makes it either desirable, necessary, or logical to drop a prohibition of the German possession of normal weapons or the elimination or control of the scientific and industrial base for their mass production and use.

It is impossible to rely in our security arrangements on curbstone judgments of any alleged revolutionary effect of the atomic bomb on general tactical and strategic ideas. The bearing of particular political and strategic situations must continue to be considered on their merits. As yet only the idea of nuclear fission and not its practical embodiment is abroad in the world. Viewed in terms of comparative potential, Germany's neighbors are still at its mercy. They can feel little security against Germany in our possession of the atomic bomb, while to conquer them Germany does not need it, unless we participate wholeheartedly in the control of Germany's power and capacity to make war. From an American point of view it is important to remember that the European wars in which we become involved always have small and remote beginnings which must be checked in their incipience if we are not eventually to have to use the most powerful weapon in our arsenal. In the case of Germany, those beginnings must be controlled at their industrial roots.

With the discovery of the atomic bomb we have come close to justifying those who have proclaimed that the world has within itself the seeds of its ultimate dissolution. To avoid that destiny the Government of the United States is seeking to obtain world-wide agreement to an outlawry of use of this terrible innovation. If that should be achieved, we should still be far from an outlawry of war as we have known it and the need to quarantine known aggressors would be as urgent as ever.

The discovery of the atomic bomb destroyed, among other things, the illusion that the Allies could afford to forego the control of Germany's power and capacity to make war simply by standing across her borders with vast armies and fleets of aircraft while permitting Germany to use its resources for war or peace. It is evident now that in addition to that measure there must be controls of internal application which can be readily utilized to prevent experimentation, design, engineering research, or manufacture of weapons, including both the traditional ones as well as novel ones in the path of developing science.

The position taken here should not be construed to mean that international action subsequent to the discovery of the atomic bomb may not call at some later time for a review and modification of the

program proposed here for Germany. The development and installation of effective machinery for control of this problem in Germany may throw additional light on what our long term program should be and the extent to which a reliance upon these special controls calls for an expansion or reduction of other methods of control. For example, the next few years may contain developments which prove that nitrogen-based high explosives no longer have the same importance as before; such a conclusion might justify the expansion of nitrogen facilities recommended in this report and eliminate the necessity for any importation of nitrogenous fertilizers. On the other hand, the relationship of development of atomic energy to a certain type of facility or materials might require new industrial removals or controls not yet included in this program. These questions of modification of the German disarmament program can be decided only as they are presented after the concrete studies which have been recommended. The only conclusion permitted now is that the disarmament program, as projected, should be carried through with a purpose and energy greatly strengthened by the recognition that the atomic bomb has taken the long-term control of Germany's power and capacity to make war out of the realm of reasonable debate.

In one other particular, the discovery of the atomic bomb relates in noteworthy fashion to the security program herein proposed. It should serve to strengthen greatly the efforts of the Allies and the United Nations to control the disposition and use of German industrial properties and the activities of German technical personnel beyond the borders of the Reich. By the same token, it should bring the governments and peoples of the neutral or formerly neutral countries to a sharp realization of the propriety and necessity of full cooperation with the Allies and the United Nations in an external security program from future German aggression. (See sec. V.)

A willing and hearty cooperation by the neutrals with the Allies and United Nations in the international elimination or control of Germany's utilization of other territory as a base for aggression will serve to render academic the troublesome questions of their sovereignty and dignity. Surely, in the sharp glare of the atomic bomb, the spectacle of German technicians free to utilize their material resources and industrial facilities as they will outside Germany cannot be viewed without the gravest concern by the Allies, the United Nations, or the neutrals themselves. Adequate measures along the lines proposed in the external security program become indispensable to security in a world that has witnessed Hiroshima.

PART II. ADMINISTRATION OF THE PROGRAM

SECTION VII. THE RELATIONSHIP OF DISARMAMENT PLANNING TO REPARATION

CONTENTS

	Page
A. Introduction	269
1. The principles covering the relation between reparation and disarmament	269
2. The amount of reparation and disarmament	271
3. Acceptance of these principles in the Berlin protocol	272
4. Execution of the principles now accepted	273
B. Industrial Armament equipment and the reparation program	273
1. Removal of production facilities for reparation	273
(a) Identification of types and quantities of facilities to be removed for industrial disarmament	273
(b) Feasibility of removal	275
(c) Ownership of plants removed	276
(d) Administrative and other aspects of plant removal	277
(e) Need for rapid removal of plant	277
2. The beneficial distribution of German plant and equipment through reparation to break German domination of European industry	279
(a) General considerations	279
(b) Principles of beneficial distribution	279
(c) Criteria for relocation	280
3. The conflict between the FEA disarmament program and reparation out of current output from industries important for war	282
C. The elimination and control of German foreign assets outside Germany through reparation	284
D. Conclusion	285

Section VII

THE RELATIONSHIP OF DISARMAMENT PLANNING TO REPARATION

A. Introduction

When the FEA Enemy Branch undertook to prepare studies on the economic and industrial disarmament of Germany, it realized that the early establishment of a disarmament program would be largely dependent upon the handling of the reparation problem. Therefore, coincident with the initiation of the study projects set forth in the interim report on German economic and industrial disarmament (January 10, 1945), a group of studies designed to develop preliminary principles and programs for handling of reparation was undertaken by the staff. A series of informal reports was prepared during February and March. They were submitted on March 31 to the United States member of the Reparations Commission.[1] The principles espoused therein were substantially adopted as United States policy for the direction of the United States member of the Reparations Commission and have since been incorporated in the Berlin Protocol.

1. THE PRINCIPLES GOVERNING THE RELATION BETWEEN REPARATION AND DISARMAMENT

Reparation can be used to support and effectuate the policy of disarmament. But reparation can conflict with disarmament if plants and equipment, dangerous or excessive from a security point of view, are left in Germany to provide for reparation from current output. There must be no shadow of doubt that in the event of conflict disarmament has priority and that reparation should be designed as an aid to rather than master of disarmament. The preservation of peace for the future at which disarmament is aimed must be preferred to satisfaction of immediate economic needs from German resources.

In accordance with this basic principle, reparation should be planned and executed so as to maximize its contribution to disarmament and minimize any obstructive effect.

The most direct way in which reparation can be made to serve disarmament is by arranging, as far as possible, for reparation to be be made in the form of transfer of plant facilities from German industries that must be eliminated entirely or reduced in capacity to achieve disarmament. If these production facilities are not used for reparation, they must be destroyed. If production facilities are

[1] Reparations memoranda submitted:
FEA Reparations Memorandum No. 1, Economic Aspects of Reparations by Germany for Destruction Wrought During the War.
FEA Reparations Memorandum No. 2, Reparations and the German Standard of Living.
FEA Reparations Memorandum No. 3, Reparations in the Form of Production Facilities.
FEA Reparations Memorandum No. 4, Separation of Territory From Germany in Relation to Reparations by Germany.
FEA Reparations Memorandum No. 6, Economic Aspects of the Distribution of Reparations by Germany Among Beneficiary Countries.

moved to countries where they can be usefully employed, the European economy as a whole will not l[illegible] of them and the economic balance of Europe will be m[illegible]an economic domination over Europe will be reduced a [illegible]ase potential of other countries will be increased. Reparat[illegible]an thus make a major contribution toward stability and peace in Europe.

Distribution among beneficiary countries should be handled so as to facilitate the achievement of objectives of disarmament. For example, plants of especial military importance should not be transferred to areas within easy access to Germany. In general, production facilities should go to countries most likely to be able to operate them efficiently, either because of past experience or because of economical access to raw materials and markets. Distributions of plant facilities among claimants should also take account of the cartel policy of the United States.

Plant facilities will be available for transfer as reparation not only from direct war industries which are to be eliminated completely but also from industries usable for war production which are to be substantially scaled down and controlled rather than eliminated entirely. The selection of particular production facilities to be used for reparation can be so made as to facilitate subsequent disarmament control of the industry.

Thus both in selecting facilities to be exported and in determining their destination, the ultimate purposes of disarmament can be served and should govern wherever they are applicable.

Another field in which reparation and disarmament can easily be made to go hand in hand is that of German foreign assets which provide an economic base for aggression to be eliminated. (See sec. V). Likewise, they constitute a source of reparation. In this field both the concept and morality of reparation as well as some of its necessary machinery, may be utilized to confiscate German-owned assets located outside Germany.

In the disposal of German foreign assets for reparation disarmament may be thwarted if the greatest care is not taken to prevent their falling into the hands of Germans or German cloaks. Selling on the open market to the highest bidder may yield foreign exchange for reparation but will not necessarily achieve the objectives of external security. The assets may pass into the hands of German cloaks either at the sale or at some later date if unrestricted open market sales are used.

Finally, reparation in goods from continuing German output in the future must be kept within reasonable limits. Arrangements for reparation of this type require very careful scrutiny to insure that Germany is not given an excuse for reintroducing prohibited industries and rebuilding or maintaining industrial plant over ceilings determined as necessary for industrial disarmament. The post-1918 policy of accepting reparation payments from current output of industries important for war had disastrous results. It is one of the most dangerous menaces to disarmament today, because against the desire for long-term peace and security it sets the short-term urge "to get something for nothing." The industrial disarmament program can be defeated at the very outset by the understandable desires of the devastated areas to get via reparation large quantities of products "for nothing" from proscribed German industrial capacity, particularly when they are unable to supply their needs out of their own production.

The answer to such demands is that most of the products concerned are not in global shortage but available from other countries and that the end results of such a procedure would be too costly for future peace.

Suppose the ceiling on German heavy war industries, such as steel, machine tools, chemicals, etc., should be determined by what is necessary for the Germans plus what is desired for reparation. The inevitable result of such a policy would be that these huge industries will be maintained, modernized, or even expanded instead of being sharply reduced to eliminate capacity with no more appropriate place in the German economy than to enable certain countries to acquire what is unwisely thought of as getting "something for nothing." Therefore, it must be the first and cardinal principle of Allied policy that the existence or level of capacity of industries usable for war production should be fixed according to industrial disarmament principles. If such a determination permits a given capacity in a given industry in Germany, reparation claims should not be added to German requirements in determining the levels of capacity and production.

2. THE AMOUNT OF REPARATION AND DISARMAMENT

Germany is to make reparation to the full extent of its ability to do so. This ability to pay must however, be calculated after provision has been made for all necessary disarmament, for the maintenance of the occupation forces, and for the support of the German population at a bearable standard of living. In other words, reparation is a residual claim upon the German economy.

Excessive reparation by Germany may well do more damage to the United Nations than to Germany. It would impose an unbearable strain on the German standard of living and consequently add to the difficulties of the occupying forces or control organization. Soon a sense of guilt would arise among the peoples of the United Nations. The remedy might be sought in a reduction of reparation. But, it is more likely that the low standard of living would be attributed to factors arising out of disarmament. Germans are more likely to resist disarmament than reparation (as the history of the years after 1918 shows). Consequently, Germany's ability to make reparation must be calculated after full allowance for the effect of disarmament on its ability to produce and to meet peacetime needs.

In fact, it will be difficult to set a single reparation total if reparation is to be made in many forms. Consequently, in setting totals for each form account must be taken of the effect of disarmament. Reparation in production facilities must not go so far as to deprive Germany of production facilities necessary for her survival as a self-supporting economy. In industries or segments thereof to be eliminated entirely from Germany, all plant should be removed that is movable and accepted by a country entitled to reparation. In other industries, disarmament requires only a shrinkage to the size needed for peaceful living. The amount removable is thus limited. Still other industries may call for no curtailment for purposes of disarmament, but victims of Germany may wish to take production facilities from such industries to enable them to rebuild peaceful economies broken by war. But, these "peaceful" industries must not be reduced in Germany below the size necessary for the survival of the population, including the provision of any necessary imports.

Finally, reparation in the form of goods to be produced in Germany in the future must be kept within limits as indicated above to prevent Germany from using such reparation as a means of redeveloping its war potential.

3. ACCEPTANCE OF THESE PRINCIPLES IN THE BERLIN PROTOCOL

The Berlin Protocol states unequivocally that the Allies will undertake measures necessary "to assure that Germany never again will threaten her neighbors or the peace of the world," and provides for the "complete disarmament and demilitarization of Germany and the elimination or control of all German industry that could be used for military production" as one of the purposes of occupation.

Further the Protocol clearly recognizes that the industrial disarmament program and the reparation program are inseparably interwoven and that removal of equipment as reparation is one of the major instruments of demilitarization and economic disarmament. Paragraph III B, 11, states that—

> In order to eliminate Germany's war potential, the production of arms, ammunition, and implements of war as well as all types of aircraft and sea-going ships shall be prohibited and prevented. Production of metals, chemicals, machinery, and other items that are directly necessary to a war economy shall be rigidly controlled and restricted to Germany's approved postwar peacetime needs to meet the objectives stated in paragraph 15. Productive capacity not needed for permitted production shall be removed in accordance with the reparations plan recommended by the Allied Commission on reparations and approved by the governments concerned or if not removed shall be destroyed.

Later, in the same paragraph (item 14), reparation and removal of industrial war potential are linked together as one of seven common policies to be established in the treatment of Germany as a single unit. Thus there is a clear mandate that removals of capital equipment under the disarmament program are to be included as an integral part of removals under the reparation program.

The Berlin Protocol further states (IV, 5 and 6) that the amount of equipment to be removed from the western zones on account of reparation must be determined within 6 months, that is, February 1946, and that such removals shall be completed within 2 years. Though this time limitation does not specifically preclude further disarmament measures, it specifies by implication the time limit in which the removal of disarmament equipment will fall within the reparation program. Since the equipment to be removed under the disarmament program is to be made a part of the reparation program, it is essential that the blueprints of productive capacity to be removed or destroyed under the disarmament program be speedily drafted and executed via reparation.

The Berlin Protocol directs that the proscribed equipment be removed in accordance with the reparation plan but limits total of all equipment removals to amounts in excess of the resources needed "to enable the German people to subsist without external assistance." The assumption is, therefore, that the limitation applies to other types of equipment than those in the disarmament categories and that the amount and character of industrial equipment removals will be governed basically by the disarmament objective.

The Protocol does not mention directly reparation from current output though it was agreed in the Crimea Protocol that current pro-

duction from Germany should be subject to transfer to provide reparation. In stating that the proceeds of exports from current production and stocks shall be available in the first place for payment for approved imports, it implies that any surplus above minimum needs including payment for imports would be available. In other words, the consideration of payment of reparation out of current output has been delayed until after removal decisions have been made and after a minimum import-export program has been approved. The postponement of any statement regarding payment of reparation out of current output is a potential threat to the disarmament program unless the total amount of equipment proscribed under the program is distributed forthwith as reparation under the plan to be devised by next February, or is destroyed. If it is not, there is the danger that when the question of reparation out of current output is taken up at a later date, there will be pressure to use any proscribed equipment remaining in Germany for such purposes rather than destroy it—an eventuality which must be guarded against at all cost.

The disposition of German-owned external assets as reparation is also provided in the Protocol and the division of external assets according to locality between the Union of Soviet Socialist Republics, the United Kingdom, the United States, and other countries entitled to reparation is specified. Though the use of external assets as reparation is not explicitly geared into the disarmament program in the Protocol, the provision for distribution of all such assets among the Allied powers will eliminate one possibility of an external base for future German aggression.

4. EXECUTION OF THE PRINCIPLES NOW ACCEPTED

The Allied Control Council and the Allied Reparations Commission are charged with responsibilities for executing the plan of reparation contained in the Berlin Protocol. It will be the task of these agencies to apply these principles in concrete and specific contexts. The observations below will serve to point up a few of the more important aspects of this gigantic task and note some of the major pitfalls which are to be avoided. These include the amount and character of industrial plant subject to removal under the disarmament program, the feasibility of removals, the principles of beneficial distribution among the countries receiving reparation, the need for avoidance of reparation from current output of commodities produced by proscribed industries, and the elimination of German ownership of foreign assets through reparation.

B. Industrial Armament Equipment and the Reparation Program

1. REMOVAL OF PRODUCTION FACILITIES FOR REPARATION

(a) Identification of types and quantities of industrial facilities to be removed for industrial disarmament

There is no practical substitute for a comprehensive field inventory to reveal with certainty existing plant capacity and the amount of productive facilities and equipment which would be removable as reparation from Germany, in accordance with the FEA disarmament program. (See sec. II.) Reasonably accurate information in the

United States on German industrial capacity at the end of the war was several years old. But plant construction and expansion in Germany continued to the time of surrender with major increases in capacity in some industries. In relatively few cases are reports from Germany sufficiently comprehensive to permit accurate estimates of productive capacity of industries within the Altreich at the end of the war. Because many of these surveys have not covered all the zones of occupation and have been conducted under conditions which preclude complete coverage in areas surveyed, estimates of plants and equipment can only be approximate.

If their shortcomings are kept in mind, the available data on German industrial capacity may nevertheless serve a useful role in approximating the magnitude of various industries and in providing rough estimates of the amount of plant and equipment which may become available through reparation. The following table summarizes for important industries in the Altreich affected by proposals in the FEA disarmament program the best estimates concerning their capacities and the amounts which might be available for reparation. Where the only reliable figures are those for Greater Germany, these were used, since in many industries the greatest proportion of available capacity is in the area known as the Altreich. No allowance has been made for bomb and other war damage.

TABLE 1.—*Estimate of some important German industrial capacity recommended for removal under the FEA Industrial Disarmament Program* [1]

Industry and product	Estimated annual capacity	Estimated annual capacity of residual equipment	Estimated annual capacity of equipment available for removal
Automotive assembly:			
Passenger cars	Large	90,000 units at less than 2,500 pounds	Not known.
Light trucks			
Bearings (units)	90,000,000	Zero	90,000,000.
Chemicals (metric tons):			
Ammonia: [2]			
Byproduct	153,000	40,000	113,000.
Synthetic	1,237,000 [3]	210,000	1,027,000.
Calcium carbide	1,725,000	200,000	1,525,000.
Calcium cyanamide	210,000	Zero	210,000.
Methanol	303,600 [3 4]		
Coal-tar distillates: [5]			
Tar	2,480,000		Equipment to be removed in proportion to reduction in coking capacity.
Benzol	794,000		
Synthetic oil	6,000,000 [3]	Zero	6,000,000.
Synthetic rubber	140,000	do	140,000.
Chlorine	516,000	75,000	441,000.
Concentrated nitric acid	970,800 [4]	For minimum industrial uses.	
Sulfuric acid (monohydrate basis)	2,500,000	1,000,000	1,500,000.
Electronic (units):			
Condensers	25,000,000 [6]	For domestic civilian uses only.	
Valves	15,500,000		
Radios	300,000		
Light metals (metric tons):			
Alumina	Fairly large	Zero	All.
Aluminum reduction	250,000	do	250,000.
Aluminum fabrication	245,000 [6]	40,000 to 50,000	Unknown.
Machinery (metric tons) (excluding tools)	Very large	1,200,000	(7).
Machine tool producing plants [6] (metric tons)	700,000	25,000 (12,000 units)	625,000.
Machine tool stocks	4,000,000	500,000	3,500,000.
Cutting tools			15 largest manufacturers to be eliminated.
Gages and precision tools			17 largest manufacturers to be eliminated.

See footnotes at end of table, p. 275.

TABLE 1.—*Estimate of some important German industrial capacity recommended for removal under the FEA Industrial Disarmament Program* [1]—Continued

Industry and product	Estimated annual capacity	Estimated annual capacity of residual equipment	Estimated annual capacity of equipment available for removal
Abrasives (metric tons):			
Aluminum oxide	44,000 [2]	Zero	44,000.
Silicon carbide	12,000 [2]	do	12,000.
Grinding wheels	32,116 [2]	do	32,116.
Optical	Fairly large		
Optical and ophthalmic glass.		For civilian needs.	
Technical and scientific optical.		Only cameras for civilian use.	
Electric power (kilowatts)	22,000,000	9,000,000	13,000,000.
Solid fuels (metric tons):			
Coal	Very large		
Steinkohle	188,000,000		
Braunkohle	250,000,000 [10]		
Dry-coal capacity	63,000,000	12,000,000	51,000,000. [11]
Usable coke	42,000,000	8,000,000	34,000,000. [11]
Rubber:			
Synthetic	See under Chemicals.	Sufficient to process allowed imports of 30,000 metric tons.	
Fabrication			
Petroleum:			
Natural, production and refining.	750,000	750,000	Zero.
Synthetic	See under Chemicals.		
Crude steel (metric tons)	25,000,000	Capacity required to produce 5,000,000.	20,000,000.
Pig iron	16,000,000 tons	Capacity required to produce 5,000,000 tons of steel and 900,000 tons of castings.	Approximately 12,000,000.
Iron and steel foundries	3,100,000 tons	900,000 tons	Approximately 2,200,000.

[1] Unless otherwise specified, figures are annual and refer to the *Altreich*. Figures given for production do not necessarily equal total capacity, and are cited only as a guide to the size of the industry.
[2] Permitted nitrogen: production 250,000 metric tons nitrogen content of product.
[3] Synthetic ammonia capacity excludes convertible capacity in synthetic oil industry but includes capacity used for methanol.
[4] Represents annual rate of production in maximum month, i. e., highest monthly production multiplied twelve times.
[5] Production estimate based on primary tar distillates supplied to distillation plants.
[6] *Grossdeutschland* production.
[7] To be determined in conformity with machine tool and steel programs.
[8] It should be noted that the figures for machine tools refer to *capacity* of the industry. In addition, there is an estimated 4 million tons of *installed* machine tools which are not included in the capacity figures. Of the total installed machinery, it is estimated that about 240,000 units or about 500,000 tons will be required in Germany, leaving about 3,500,000 tons available for removal.
[9] Production in 1943.
[10] Production.
[11] Reduced on the basis of FEA recommendations on steel and chemicals.

The table does not include data on facilities specialized for the manufacture of arms, ammunition, and implements of war. (See sec. I.) Consideration should be given to the complete destruction of such units, since the desirability of transferring them is dubious, particularly to countries where conditions are likely to be unstable for a considerable period. However, portions of such plants or equipment may have general uses, for example, machine tools, and so constitute desirable reparation items.

(b) Feasibility of removal

A large percentage of industrial plant is capable of transference to a new location as reparation. During the war large quantities of used production equipment as well as whole plants were moved more than halfway around the globe with satisfactory results. But it would not be economical to carry for any considerable distance large quantities of certain used materials, such as bricks, because of their bulk, the

availability of similar materials or acceptable substitutes near the new site. Among the factors involved in considering the feasibility of removal, the following are important:

(i) *Economic factors.*—Under ordinary conditions the desirability of acquiring used plant or equipment, dismantling it, moving it to a new site, constructing buildings to house it, and reassembling it, depends on the total cost of the operations in relation to potential returns. In transfers made on reparation account, some of the usual cost items will not be borne by the new owners since they will not have to pay former owners. Moreover, in the immediate future, where there is urgent need for plant equipment in Europe and it is impossible to meet these needs within a reasonable period, the initial cost of acquiring plant and equipment will not be as important as in normal times.

Some kinds of German equipment available for transfer will be modern and in good condition. Others will be less efficient, though useful, for a limited period. The desirability of transferring the less efficient equipment will depend primarily on the urgency of the need of the claimant, the possibilities for obtaining new equipment, and the time which must elapse before the German equipment can be delivered to a recipient.

(ii) *Dismantling and reassembly.*—Some plants can be transferred almost without loss. Others require some new parts before they can be put into operation. In general, anything that has been fastened together with screws and bolts is easy to disassemble, ship, and reassemble. Nearly all equipment that has been welded or riveted together can be disassembled and rebuilt on a new site, but there is usually some loss of the elements.

(iii) *Transportation.*—The availability of transportation, as well as the character of the facilities, may play an important role in determining what claimant countries receive. Among factors on which delivery of bulky equipment by rail will depend are the following:

(*a*) Availability, kind, and condition of the rolling stock on hand;

(*b*) Rapidity with which substantial bridges can be reconstructed to replace those destroyed;

(*c*) Maximum load existing or makeshift bridges will bear;

(*d*) Clearance in tunnels and on bridges;

(*e*) Track gage;

(*f*) Minimum radius of track curvature.[2]

(c) *Ownership of plants removed*

In general, as a security measure, the plants removed in given categories should in all cases include those of the large combines. This is the only practical method of breaking the power of the oligarchy which strangled free competition and prevented the development of a more liberal political system in Germany. While the control of certain types of production would seem to be simplified by concentrating operations in a few plants, such action is likely to engender a false sense of security and make control authorities less alert to

[2] While the question of tunnels, track gage, and track curvature may be of little importance on the fairly flat northern European plain, it may be a critical factor in southeastern Europe. The type of rolling stock available will be of importance in shipping both bulky and particularly heavy items.

detect secret production. On the other hand, if production is permitted under license in smaller plants whose names and quotas are published, self-interest will prompt licensed producers to aid in preventing bootleg operations that cut into profits.

In the selection of plants for removal under the demilitarization and industrial disarmament program, there should be no difference in treatment between those owned by Germans and those owned by foreigners, since ownership bears little relationship to German war potential. The problem of retention of ownership in a non-German locale or of compensation is separate from disarmament and may be provided for foreign owners without prejudice to disarmament considerations.

(*d*) *Administrative and other aspects of plant removal*

It is essential that the disarmament measures be carried out on a program that (*a*) covers all of Germany, (*b*) makes reasonable provision for the capacity that should be left to supply domestic needs, and (*c*) divides the available plant with primary concern for future international security.

The program should be based on an over-all inventory conducted by a central Allied authority, which will evaluate the equipment to be removed in accordance with the salvage value to the reparation claimant. This value should constitute the amount in the reparation account kept for the claimant. German services in disassembly, storage, and shipping are also chargeable to the reparation account. The extent to which Germans can be trusted, without close Allied supervision, to disassemble a plant and handle it is debatable since the opportunities for sabotage are great. Disassembly requires skilled, careful work and the marking of each piece to prevent loss and to permit rapid reconstruction.

In order to provide the maximum benefits to reparation claimants, full opportunity should be afforded them for study of plants and equipment before they are disassembled, and German owners or managements should provide blueprints, operating instructions, and other data necessary for sufficient use of the material at the new site. When plants and equipment are to be removed from industries which will not be eliminated completely, engineers and foremen of the recipient nations should have an opportunity to study operations in similar German plants.

The administrative task will be complicated by the existence of four zones of occupation. Difficult problems affecting orderly dismantlement, protection from looting, storage of easily destroyed parts, loading, and shipment will be encountered. Although the magnitude of the job is comparable to the wartime movement of Russian plants to points beyond the Volga, there is no actual historical parallel since this is the first time that an attempt will be made to remove the physical base of war from one country and distribute it among several others. Its success will demand both economic statesmanship of the highest order and great engineering skill.

(*e*) *Need for rapid removal of plant*

Swift removal of plant and equipment in accordance with disarmament objectives is an urgent necessity if Germany is to be genuinely disarmed and if the United Nations are to obtain the maximum benefit from reparation.

After World War I Germany used delaying tactics in a successful campaign to prevent her disarmament. Each day of delay enables potentially aggressive forces in Germany to marshal powerful economic forces at their command, many of them established long ago for the precise purpose of protecting German interests in case of Germany's defeat. Delays in planning and executing the disarmament plant removal program play into their hands. If the reparation program is not quickly consummated, pressures will be created to put production facilities to work where they stand.

With unemployment in Germany, the immediate task of keeping the people from starving may make some administrators amenable to German proposals for putting idle plants to work which may have the incidental effect of thwarting disarmament. Reports have been received that plans for solving postwar problems have been offered by the very Germans who planned the war. Krupp is said to be eager to put his war plants into operation at once "to relieve the need for agricultural machinery in all parts of Europe." Such tactics are reminiscent of those used to prevent destruction of the Krupp armament plants at the end of World War I.

Both in Germany and other countries the period immediately following the end of hostilities is the time for reconverting plants that have been engaged in war production. So long as plants remain idle in Germany because the removal program has not been determined or put into effect, there will be economic waste of facilities much needed in Europe in addition to physical deterioration of unused equipment. There would likewise be a serious waste of critical materials if plants which are to be removed from Germany or destroyed were retooled or otherwise reequipped for peacetime operations. It is important that recipient nations know what plant will be available from Germany to augment their existing capacities and meet their reconversion needs. Many need immediately machine tools and other equipment available now in huge quantities in Germany. This equipment should be shipped out as rapidly as possible.

It may be desirable for the claimant nations to send representatives into Germany as soon as possible to study plants as they stand prior to their being dismantled. Such action, however, is impossible as long as uncertainty remains about reparation to be obtained in this way.

A claimant country willing to accept outmoded equipment because of the critical need for goods or employment might well lose interest if it could not be made available for a considerable period.

Even temporary reactivation of any plant that is to be removed or destroyed is dangerous.—Aside from its danger to international security aims, the reactivation of any plant whose operations are not to be continued is psychologically unwise. The problem of resettling and stabilizing a population whose pattern of life has been violently disturbed is great enough without adding an illusion of future security. Delays in reorientation of German workers and economy raise doubts about our intentions and increase the difficulties of control.

2. THE BENEFICIAL DISTRIBUTION OF GERMAN PLANT AND EQUIPMENT THROUGH REPARATION TO BREAK GERMAN DOMINATION OF EUROPEAN INDUSTRY

(a) General considerations

Before and during the war, the economy of Europe was organized to serve Germany. This former dependence of the various European countries must be reversed and the possibility of future German domination must be eliminated. It is fortunate that a plan for German economic and industrial disarmament can also be made to include a method for achieving a more dynamic and yet more stable reorganization of the industrial system of the Continent.

These dual objectives can be accomplished by the beneficial distribution of German plant and equipment in the disarmament categories to other parts of Europe through the reparation program. According to the disarmament terms, Germany will not be allowed to retain any existing plant and equipment in certain industries and will be permitted to operate certain other industries classified as important for war only at reduced capacity. The elimination of all this excess equipment in Germany need not affect seriously the healthy rehabilitation of Europe. The strengthening of the European economies which have been dependent upon Germany, while Germany's industrial war power is substantially diminished, is an integral part of the FEA disarmament program. It is necessary, in fact, to accomplish one of its major aims, the smashing of German domination of the European economy. The use of this plant and equipment as reparation will serve not only as a justifiable payment by Germany for the damage and destruction which it has caused, but also as one of the quickest means of reconstructing the economies of Europe on a more balanced basis.

To encourage the taking of such equipment as reparation there are two possible stimulants. First, it could be decided that such equipment would be given priority of removal and valuation over other removals of equipment, so that the recipient country would be assured of minimum delay in transfer. Second, if a decision on disarmament can be reached providing that industries marked for destruction or removal shall not continue or be put in production, a powerful incentive will be created among countries needing the products to take the equipment as reparation.

The distribution of this excess equipment must be carefully considered from an economic view. Backward countries are apt to be overly ambitious in industrialization plans and, lacking in industrial experience, too optimistic as to their ability unaided to sustain advanced industries on an economic basis. Industrialized countries, on the other hand, are apt to be bearish on the ability of so-called backward countries to industrialize, as predictions about the Union of Soviet Socialist Republics 15 years ago bear witness, and loath to encourage new local competitors in their former markets.

(b) Principles of beneficial distribution

In determining distribution of plant and equipment within the disarmament categories there are three basic principles which must be applied:

(i) The industry should be able to function without artificial support in the form of subsidies or protective trade controls after

a reasonable period, say 10 years. The establishment of industries in countries unable to operate them if exposed to international competition, would lead to a renewal of trade barriers to protect the domestic market, which would be a disastrous result. High-cost industries which Germany had developed for self-sufficiency reasons should not be removed as industrial units, unless it can be demonstrated that they can be operated efficiently elsewhere, though separate machinery items convertible to other uses could be removed. The remainder should be destroyed.

(ii) The new location of the industry should contribute to a better balance and reorientation of the European economy. Though possibly less dangerous than in the case of Germany, it will not be desirable to create a new industrial domination by distributing plant and equipment in such a way as to make any one country a veritable monopolist in any of the industries within the armament categories. This is particularly true if the industry of the country is already cartelized. In fact, the distribution of the German plant and equipment should be planned so as to develop European competition which would serve as a brake to the development or further extension of European cartels.

(iii) The new location should take into account certain dangers to peace. For example, the location of too many of the industries in the armament categories relatively near to German frontiers would endanger the disarmament objectives. Also industries with an immediate war potential should not be transferred to politically unstable nations whose peaceful objectives are not assured.

(c) *Criteria for relocation*

Criteria which should be used as bases for the distribution of disarmament equipment include the following:

(1) Need for equipment:

(*a*) *Present producers.*—The most easily demonstrated need is that for rehabilitation of an industry or plant which has formerly operated efficiently and which has been destroyed or damaged. Repair of such production facilities would be clearly justifiable.

If there has been a prewar production deficit in domestic requirements or if there is a reasonable assumption of increased consumption requirements, increased capacity could probably be advantageously used if other production factors are available.

In increasing capacity for export the future of the export market should be considered. If the export market has been located in other European countries, it will be necessary to weigh the advantages of locating the industry in one of the countries which was formerly a market, as against increasing the capacity of the former exporter.

(*b*) *New producers.*—New producers should be countries which were former importers of the products of the industry or which, as exporters, would have special advantages in natural resources. Among the new producers will be the nonindustrialized countries, industrial countries which need the new industry to round out their industrial complex (e. g., bearings) or industrialized countries

which have specialized in certain industries for export which are losing world markets because of world industrialization (e. g., textiles) and which could utilize their skills advantageously in newer industries such as plastics or radio.

(2) Production requirements:

The criteria for physical production requirements are fairly obvious, and difficult to assess only when balancing the inadequacy of one or more factors against the adequacy of other factors. They include availability of power (fuel or hydroelectric), essential raw materials, labor, technicians and managers, feeder industries, and transportation.

In addition, ready access to maintenance and repair parts is essential. If possible, it will be highly desirable to transfer these plants with the main plant in order to develop in the new location an entire industrial complex. If not, there must be assurance that the new producing country will have access to non-German suppliers of repair parts. In fact, in planning over-all distribution, the relocation of plants making component parts will be of great importance. The recipient countries should guarantee to supply parts to the other countries in which German plant and equipment has been relocated.

(3) Other essential considerations:

In all cases it will be essential to make certain that the newly established industries are given access to patents governing the processes and all other technical information pertinent to production. It must be made certain that the patents contain sufficient information to render the plant capable of practical exploitation. In the case of the less industrialized countries it may also be necessary for the Allies to provide non-German technical experts to get the industry into operation and to train nationals to carry on. Every precaution must be taken to avoid future dependence on German technicians, the advance guard of economic penetration.

In the case of a number of types of plants, relocation will involve financial investment on the part of the recipient. For example, in the relocation of power plants only movable equipment can be utilized and stations as well as foundations for heavy equipment will have to be built in the new locations. Some parts will be destroyed in dismantling, while other parts such as very large boilers may not be profitable to remove and will have to be replaced. Lack of capital should not be considered a limiting factor in the distribution pattern until the possibility of foreign loans has been fully explored. It would be appropriate for the representatives on the Reparation Commission of capital-exporting countries to recommend such loans to their governments or to consult with the International Bank for Reconstruction and Development when it is established. Unless careful plans are made to assure that the elements needed for successful operation are provided, the removal of equipment from Germany will result in a reduction of European industrial potential at least in the next 10 years. It is also important to emphasize that, if a better-balanced European economy is to be achieved, the easy decision to allocate plant and equipment in countries with industrial know-how rather than assuming responsibility for additional assistance to other countries must be guarded against and the larger interests of the European economy given due consideration.

8. THE CONFLICT BETWEEN THE FEA DISARMAMENT PROGRAM AND REPARATION OUT OF CURRENT OUTPUT FROM INDUSTRIES IMPORTANT FOR WAR

Substantial reparation out of future German output requiring the retention of war production plant and equipment must not be permitted. If there is a conflict between disarmament policy and reparation considerations on this score, the disarmament policy must prevail.

On this point the lessons of the reparation program following World War I are all too clear. According to its terms, Germany was to provide large quantities of reparation out of current output. In consequence plant and equipment were kept going, labor employed, and raw materials imported. Eventually, these plants were modernized and new plants built for the plausible and somewhat logical reason that only in this way could Germany meet her reparation commitments. The funds were provided by foreign investors who were, in part at least, beguiled by the fact that Germany was a good investment, subject as she was to certain international regulations under the Peace Treaty. In his book, the End of Reparations (1931) published in the United States, Dr. Hjalmar Schacht made the following statement, the terrible consequences of which the Allies were soon to learn:

> It is almost ridiculous when some foreign visitor comments on the extensive and naturally costly modernization of German industry, of the German merchant marine, etc. It would have been impossible for Germany to resume competition with out-of-date machinery, and they who force Germany to work up an annual export surplus of two billions to be used for reparations, have no right to complain if Germany exerts herself to that end. The fact that Germany is making the effort only proves the serious determination to contribute to a peaceful solution of the reparation problem. Beyond that point the world will have to adjust itself to the irrevocable determination of the German people to maintain its cultural standards.

Thus, it can be truly said that the policy of producing reparation out of current output, established by the Allies and fostered through generous credits, forged the first weapons of World War II.

Aside from this bitter experience there are a number of over-riding reasons for supporting the policy of no substantial reparation from current output.

First. Reparation of this kind would require the maintenance of sizable production necessitating the retention of considerable war production equipment unless the quantities taken as reparation were drained from the limited resources retained for minimum living requirements. Either eventuality would be disastrous to the economic and industrial disarmament program. The continuance of German industries with an important war potential above levels necessary for a peaceful Germany cannot be hazarded as we now well know. The reduction of the standard of living below survival by taking excessive portions of the industrial product as reparation cannot be contemplated both because it would cause disease and unrest which would be intolerable alike to the victors and the conquered, and because it would center attack on the disarmament program as the activating cause.

Further, the maintenance of large productive output would require considerable amounts of imports in addition to minimum essential quantities for the domestic economy. Since Germany's only means

of paying for imports is by exports, increased imports would have to be paid for by additional exports from increased production; taken out of minimum consumer supplies; or financed by foreign credits. As already indicated, any of these three methods would conflict with and obstruct the disarmament program and, even if the immediate needs could be met, the price in view of future threats to peace would be too high.

Second. There is the danger that continued operation of such plants will renew the dependence of other European countries on Germany as a source of supply, a situation which must be avoided at all costs. If reparation is provided out of current or future production of these industries there is the possibility that countries receiving such equipment may become satisfied with the status quo and fearful of any interruption in supply or change in quality or specification, resulting from subsequent removal to other countries.

Third. The continued production of manufactured items in the heavy-industry categories involves not a single industry but a complex of industries. Reparation out of future semifinished or finished goods cannot be isolated as a single factor. The production of such goods requires not only facilities for the final stage but also for all the antecedent stages which in themselves may have a war potential for other uses, as illustrated by the various chemical products based on the refining of crude potash salts. In addition, the production of practically all products within the disarmament categories would require imports of raw or semifinished products, which must be kept to a minimum because of the necessity of paying for them by commercial exports.

On the other hand, reparation out of future output of primary products or raw materials in Germany with an armament potential, such as coal or timber, would not be as disadvantageous to the disarmament program provided that sufficient amounts were first made available for the minimum needs of the consumer economy and for necessary commercial exports needed to pay for minimum imports. Crude materials require the minimum of facilities for delivery and do not need elaborate feeder industries. The equipment itself could be imported if its production in Germany were considered undesirable. Further substantial demands in some instances might draw heavily on reserves and lead toward depletion, thus reducing the war potential.

Fourth. Provision for the production of manufactured items requiring the retention of war-production equipment for reparation account will greatly complicate the peacetime conversion and redirection of the German economy. The continued operation of a plant in whole or in part will tend to make it an integral part of a community pattern, and when the plant is wrenched out later, removal will have a disorganizing effect on a reviving economy. In addition there may be increased resentment of workers upon transfer later to other occupations, if they have first been returned to their old jobs and skills in which they claim a vested interest. Maintained production would, moreover, continue the industrial "know how" and the opportunity for disguised research.

Fifth. Even temporary production of reparation goods would be highly prejudicial to the disarmament program as it would delay removal. It is imperative that the equipment be removed as speedily as

possible while the "will to act" on the part of the Allies is at a peak and while the Allies are in complete control. The longer the delay, the more difficult will be the decision to dismantle plant, particularly if partial removal under the disarmament program has been carried out and the threat of rearmament seems, thereby, more remote. Further, as past experience has shown, the future removal could not be entrusted to a German government which would have every reason to sabotage it.

If the plant or equipment is to be moved and the products are needed by the various European economies, early establishment in the recipient country is essential, in order that the relocated plant may become an integral part of the country's rehabilitation program. If it is delayed, these countries may rebuild or establish their own industries, and the German equipment will lose reparation value. Or having become again dependent on German production, these countries, as stated above, may be content to leave it so, cease to press for the disarmament program, and refrain from developing their own production as was the case after World War I.

Finally, continued use in Germany will result in further obsolescence before removal, and will make the equipment less desirable in the future as reparation. It can be argued, of course, that the loss in value as reparation will be compensated for by reparation from output. However, if equipment used for temporary purposes results in obsolescence to the extent that it is not worth the cost of removal and resetting, there will be a strong argument to extend the period of production as long as it is usable in Germany.

C. The Elimination and Control of German Foreign Assets Outside Germany Through Reparation

Of the several possible ways for the Allies to deal with German foreign assets, that of disposing of them through reparation appears to be the one most likely to fulfill what is considered the principal aim of Allied policy toward Germany—the economic and industrial disarmament of Germany. The reparation mechanism is flexible enough to serve not only as a collection agency for the purpose of getting the highest possible monetary return but can be so operated as to disregard the monetary return in specific cases in favor of economic security aims, including the prevention of German acquisition of new foreign bases from which to start again a war industry.

If German foreign assets are not dealt with under uniform standards, there is a real danger that neutral and some other governments would exercise only superficial control which might permit a continuation or easy reestablishment of German influence. To deal with German foreign assets through the mechanism of reparation does not solve this problem. However, it may be used as one device to establish standards of procedure which will go far in assuring uniform treatment of the assets.

Reparation procedure which would combine vesting of German foreign assets from within Germany with those disclosed by a census in each neutral country taken by the respective governments would permit collection of both monetary reparation and reparation in kind. Monetary reparation collected from cash balances, securities, etc., could be used either for distribution among claimants or as reserve

funds for any settlement of German prewar debts which the Allies may decide to negotiate with the countries in which those liquid assets are located. It is in the field of reparation in kind that the fulfillment of security aims will be sought. When dealing with German industrial plants or financial institutions in neutral countries, it will be possible to choose between dismantling, liquidation, destruction, or continued operation for the manufacturing of goods needed by some of the Allies for reconstruction purposes. To a minor degree stock piles of raw materials or finished goods may be available for the satisfaction of immediate needs. In this respect some consideration will have to be given to the needs of local economies, but whenever it should be decided to agree to the continuation of a German plant outside Germany, the primary condition should be that such plants are operated consistently with principles or procedures designed to prevent renewed German penetration. Output of these plants would either go to reparation claimants or be used locally as payment for other raw materials or industrial products which those countries could deliver to Allied countries for purposes of reconstruction.

Such close control is necessary in order to achieve also the less tangible aims of economic security, the control or elimination of the technological skill of German personnel abroad, particularly where such skill is used in the form of secret processes or know-how.

D. Conclusion

The total amount of plant and equipment proscribed under the FEA industrial disarmament program, which is not to be destroyed outright and which is suitable for removal, should be included in the reparation program to be drafted in February 1946 according to the terms of the Berlin Protocol.

To this amount additional equipment in the nonwar category may be added for purely reparation reasons provided that it is within the limits for removals set by the Berlin Protocol regarding the German standard of living. It must be strongly emphasized that any limitations which require that sufficient productive capacity be left in Germany to maintain living standards, should not be applied to equipment in the disarmament categories. This stipulation will not affect the total amount of equipment available for reparation but will give the maximum insurance against the retention in Germany of a war potential which is a threat to peace.

If the Allies are determined that there shall be nothing left of German industry important for war beyond that necessary for Germany's approved peacetime needs, they must be adamant on the question of reparation in the form of current or future production of manufactured items requiring the retention in Germany of equipment proscribed by the disarmament program. The urgency of need of the devastated areas will be a compelling argument which must be resisted. It can, however, be countered with a positive program for speedy relocation of the excess equipment which would thus serve both the disarmament program for Germany and rehabilitation needs of the devastated countries.

In planning the reparation program we must ask: Does the proposed step advance a policy of economic and industrial disarmament and perhaps even more important—does the proposed step lay the

foundation for a future sabotage of a program of economic and industrial disarmament? These should be the primary considerations; in other words, not what bills are expected to be paid but how a reparation program is going to affect economic and industrial disarmament of Germany now, and more especially in the future.

Since our primary purpose is to bring about the economic and industrial disarmament of Germany, a policy with respect to reparation can and should be pursued to the end that industrial opportunities may be extended to the rest of Europe and the world. If there is the will, Germany's former excessive capacity designed for war can be allotted where it can do the most for the peaceful trade of the world, and in a manner assuring world-wide security.

The execution of such a plan should be swift. This not only will give much needed aid to the reparation-receiving countries out of Germany's present capital assets but will also furnish the best insurance against (*a*) the devastating effects of public lethargy likely to set in after the war period of great emotional strain and (*b*) division of purpose among the United Nations.

The greatest danger lies in a schedule of reparation out of production, deliverable in the future. Here any plan should avoid elements of such a nature as to promote or require the building up of German economic capacity to wage war. Furthermore, recurring reparation—reparation from current production in the manufactured or semi-finished goods field over a period of years—should be permitted only after weighing the probabilities of sabotaging the program here outlined. An over-industrialized economy in Germany again will be a menace to the world.

With primary emphasis on economic and industrial disarmament and with a proper perspective on the role that reparation can and should play in such a program, a satisfactory approach may this time be made to the problem of how to keep Germany from making war again.

In addition to disarming Germany, the removal via reparation of equipment prescribed under the disarmament program will also provide a further bulwark to the Allied peace objectives, if the equipment is distributed so as to assist rehabilitation and industrial development of the recipient countries. Such a program of beneficial distribution of reparation equipment will free Europe from German economic domination. The disarmament program will also be aided outside Germany by the equitable distribution of German foreign assets or proceeds therefrom within the reparation program, since these assets have provided an economic base for aggression in the past and could do so again.

Thus, the Allied authorities who draft and execute the reparation program have within their power the most effective tool for the disarmament of Germany. Moreover, they have a mandate from the Tripartite Conference at Berlin to eliminate Germany's war potential by the removal of designated productive capacity as reparation. Therefore, it is highly important that by February 1946 operative schedules for plant and equipment removal be completed, that they include the facilities which the FEA disarmament program prescribes for elimination from Germany, and that these removals be speedily executed within the next 2 years, according to the principles of beneficial distribution described above.

SECTION VIII. THE ADMINISTRATION OF THE PROGRAM DURING OCCUPATION

CONTENTS

	Page
A. Introduction	289
B. Lessons from administration of disarmament after World War I	291
C. Policy governing relations between Allied authorities and German Government in administration of disarmament	292
D. Prohibition or restriction of specific operations	293
E. Destruction of plant equipment and products	297
F. Removal or shipment of plant equipment, materials, and products (including reparation)	297
G. Control of residual capacity and operations (including research)	298
1. Licensing of new industrial construction and research	299
2. Licensing of production where production ceilings are set for Germany as a whole	300
3. Allocation of energy and basic materials	301
4. Reports, audits, inspections, and investigations	302
5. Control of imports and exports	303
6. Control of spending and taxation	305
7. Regulation of cartel, insurance, and other international financial transactions	306
8. Public reporting and post-audits	307
H. Conclusion	308

Section VIII

THE ADMINISTRATION OF THE DISARMAMENT PROGRAM DURING OCCUPATION

A. Introduction

The effectiveness of any economic and industrial disarmament program will depend upon the administration machinery provided for carrying it out. The best conceivable policy or program is of no value unless it is susceptible of execution and the necessary organizational facilities and energy are available to carry it through. Hence, the formulation of recommended policies or programs cannot be wholly separated from a concern with the problems of administration.

Accordingly it is the purpose of this section to explore the administrative feasibility of the programs previously proposed and outline the administrative procedures that could be adapted to their execution. This discussion will proceed in the general framework of the Allied Control Council, the organization already established by the Allies to develop common policy and coordinate certain occupational activities in the various zones.

The discussion here of particular administrative machinery is suggestive rather than definitive. Men in the Control Council proper will be in the best position to devise the detailed administrative procedures best calculated to achieve the basic objectives.

It is important to avoid confusion between an administration of a disarmament or security program and the much broader and more complex task of governing all aspects of German society which confronted the Allies in the initial occupation phase. The program described in this report is a disarmament program, not a program for the governance of Germany in all its aspects. Hence, the administrative procedures to be discussed (see subsec. B through G) are those necessary or desirable to execute the disarmament program, and not to perform all the manifold tasks of military government or even Allied control of German civil government.

Much of the contemporary discussion of the German occupation blurs these two problems. General demands for the reestablishment of a German governmental machinery, the abandonment of military government, or the withdrawal of the bulk of the occupying forces should expressly differentiate between these purposes and any relinquishment of Allied responsibility or ability to control Germany's power and capacity to make war.

Indeed, one of the major problems of Allied administration is to build up machinery for the prevention of future German aggression adequate to make feasible a reestablishment of German governmental machinery, abandon full-scale military government, and greatly reduce the occupying forces. Those who seek these other objectives of occupation policy will serve their purposes more effectively if they stress the importance of accelerating the establishment

of adequate administrative machinery for the long-term execution of the disarmament program.

It was this aspect of the overall problem that was the basis of the following paragraph in the FEA proposed "Preliminary United States program for German economic and industrial disarmament," which was submitted on April 15, 1945 (see appendix C):

> 10. *Long-term machinery for industrial disarmament controls.*—It should be an aim of military government and other related international organizations concerned with the prevention of German aggression to develop, during the period of occupation, a basis for the maintenance of a permanent system of controls of the general type described above. It should be contemplated that *at the end of military occupation* some of the complex and complicated controls necessary to an industrial disarmament of Germany and the creation of a more desirable balance of economic development in Europe between German and non-German areas would have to be abandoned or substantially modified. Our objective should be to have established a simple and manageable set of controls which can be administered for the indefinite future by an international body, without the necessity of full military occupation, through a system of surveillance and inspection backed up by the ready availability of economic and military sanctions.

In this connection several points are worthy of observation by way of introduction:

1. The FEA disarmament program may be executed through administrative machinery which is adapted to a long-term control of Germany's power and capacity to make war, without the necessity of maintaining huge armies of occupation, continuing military government or any full-scale responsibility for the internal governance of German society.

2. Rather, the FEA disarmament program may be effectuated by a corps of administrative personnel, which will include both civilian and military experts, specially qualified by background and training to negotiate and direct the execution of the disarmament programs. With such a corps of administrative experts established in Germany and their control procedures in working order, certain desired objectives could be achieved.

Occupying forces in the large numbers now in Germany would not be necessary and substantial forces could be withdrawn. Military government in due course could be replaced by the German authorities, who would continue to be subject to the Allied control organization in all matters involving disarmament, reparation, or any other continuing Allied programs. This corps of civilian and military technicians and administrators in the disarmament field, would have to be supplemented by (i) a trained inspectorate competent to make independent checks on compliance and (ii) a small especially trained security force in Germany necessary to carry out protective and enforcement measures.

3. The entire organization, generously estimated, would amount to only a small fraction of the personnel the Allies now have in their occupation forces. To force the German Government and people to bear the expenses of this administrative corps would affect their standard of living in only a minute degree.

This could be done without either forcing the Allies to pay the bill for maintaining German disarmament or authorizing exports, capacity, or production in the heavy industries important for war beyond the ceilings fixed for disarmament purposes.

4. The development of a permanent administrative corps together with the control procedures contemplated by the FEA

disarmament program, is an organizational and administrative task of the highest importance to any German security program. It will require skill, energy, and resources of a kind and in amounts transcending the average governmental agency or departmental effort.

B. Lessons From Administration of Disarmament After World War I[1]

Much can be learned from the administrative mistakes committed in carrying out Allied plans for German disarmament after the last war. These errors must be not repeated. The major deficiency in effecting disarmament after World War I, it is true, was a substantive one—the Allies failed to agree on a real disarmament policy. But even to the extent that disarmament was envisaged, it failed of realization. The Treaty of Versailles failed to give the Allied officials real authority and it failed to set up the necessary administrative machinery to implement even its meager provisions. Three Inter-Allied Commissions of Control, Military (Ground), Naval, and Air were provided for. The major shortcomings can be summarized as follows:

1. The Commissions were slow in getting started. Fourteen months elapsed between the signing of the armistice and the commencement of active enforcement—ample time for hiding and camouflaging of plants and equipment.

2. The Commissions lacked adequate independent powers and freedom of action. They were hemmed in on both sides. On the one hand, their action was circumscribed by other inter-Allied machinery, e. g., the Conference of Ambassadors and the Inter-Allied Military Committee of Versailles. On the other hand, the Allies were reluctant to treat Germany as a defeated nation and to invade her sovereignty. The Commissions had to plead their case within the Allied family and to argue with the German Government concerning the meaning of the provisions of the treaty.

3. The Commissions lacked adequate enforcement powers and staff. For example: They had to ask in advance for permission to make inspection visits at factories and military installations. They lacked adequate skilled staffs and even Allied military garrisons. The German courts for their part invoked the German treason law against informers cooperating with the Allies.

The administration of German disarmament can avoid the errors of the past. Allied authority is clear and complete. The Allies now have the legal authority (unconditional surrender); an Allied Control Council has been established; it has jurisdiction over Germany. Now, to launch an effective disarmament plan, the only Allied administrative need is to establish, as a part or an adjunct of the Council, the limited special machinery peculiar to the disarmament program utilizing, in large part, the organization already developed for other occupation purposes.

[1] A recently published book by General Morgan entitled, "Assize of Arms", London, 1945, provides an interesting and instructive account by the British member of the Allied Disarmament Commission.

C. Policy Governing Relations Between Allied Authorities and German Government in Administration of Disarmament

It is self-evident that until a German government is established and German institutions are de-Nazified and demilitarized, the complete responsibility for the initial execution of the disarmament program must rest with the Allied authorities. Upon the establishment of a de-Nazified German government, rid of the General Staff, war planning and directing ministries, departments, agencies, and organizations, the Allies will be able to place upon reestablished German governmental machinery much of the administrative burden. German governmental institutions should be required to assume responsibility for execution of the controls over the residual economy, within the over-all disarmament limitations established by the Allies and subject to Allied supervision.

The administration of the FEA disarmament program requires, however, direct Allied administration of a limited number of highly strategic functions, primarily in the field of plant destruction and removal, a control of the construction of new industrial plant and facilities, and a direct enforcement of the military and scientific disarmament restrictions. It has already been stated that the organization of German governmental machinery and the assignment of administrative responsibility to it is predicated upon the execution of a thorough program of de-Nazification and demilitarization. An "institutional" disarmament must precede the assignment of functions and authority to a German government, both as to persons and institutions. The Intelligence Services, the Armed Forces Divisions, and the Internal Affairs Division should be primarily responsible for the execution of the de-Nazification and institutional disarmament programs within the governmental and military fields. Institutional disarmament in the economic field, especially as to the prohibition of cartels and cartel-like organizations, the dissolution of combines, the abrogation of international cartel arrangements, the control of foreign assets, insofar as action in Germany is required, and the elimination of semipublic allocation and control agencies, should be the responsibility of the Legal, Finance, Economic, and Reparation, Deliveries and Restitution Divisions.[2]

Some of the principles on which the administrative machinery for disarmament should be based are as follows:

1. THE ADMINISTRATION AND ENFORCEMENT OF KEY PARTS OF THE PROGRAM FOR DISARMING GERMANY CANNOT BE ENTRUSTED TO GERMANS, BUT MUST BE, IN ALL ESSENTIAL PARTS, A FUNCTION OF THE OCCUPANT POWERS

Not every phase, however, requires direct Allied administration. The program involves, among other things, the destruction of plants, the removal of equipment, the shipment of raw materials, and restrictions on the kind and quantity of civilian production to be permitted. The responsibility for the detailed day-by-day administration of the latter function, subject to over-all limitations established by the Allies and to their supervision, should be left to

[2] Reference hereinafter to a division of the Council is intended to refer to the composite of the force division so named in the various national segments of the Council.

German governmental machinery when it is established. The primary responsibility for the planning and control of the German residual economy and economic life in general, within the framework of Allied policies, should be placed on the German authorities. However beneficial the long-range effects of demilitarizing the German economy, the necessary steps toward that objective will clearly involve no immediate advantage to the Germans and in many cases will involve temporary disadvantages, some of them serious. Germans, even if sincerely opposed to nazism and militarism, cannot be expected to be conscientious supervisors of the destruction or dismantling of German plants and equipment that heretofore have given employment to thousands of fellow Germans. Disarmament is economic surgery; and the patient should neither supervise the operation nor handle the scalpel. The patient's present condition, largely the consequence of his own doing, is a threat to the community of nations; the occupying powers and not the patient must determine and conduct the operation.

2. THE DISARMAMENT PROGRAM AND ITS ADMINISTRATION SHOULD AS FAR AS POSSIBLE BE AN INTER-ALLIED PROJECT, COORDINATED FOR GERMANY AS A WHOLE

Zonal disarmament with only zonal supervision and direction may overshoot or undershoot the mark and may involve inequalities of treatment endangering the success of the program. The concept of total war which Germany established cannot be met with a concept of fractional disarmament. The German war potential is a complex to be understood and dealt with as a whole through the Allied Control Council and any German central administrative agencies that it may be necessary or desirable to reconstitute for that purpose.

3. THE ADMINISTRATIVE MACHINERY SHOULD BE AS SIMPLE AS POSSIBLE

Techniques which accomplish the most with the fewest people and the fewest steps should be favored. The FEA disarmament program is here adapted to the framework of the Allied Control Council and its subdivisions. Its administration during the period of occupation does not require the establishment of new agencies in Germany. References in this report to divisions, branches, and other units of the Control Council are based on the present USGCC organization chart. If the organization of the USGCC is not adopted as that of the Control Council or if some of its subdivisions are changed, the references should be understood to apply to units performing comparable functions.

D. Prohibition or Restriction of Specific Operations

The Allied Control Council as the supreme authority in Germany should be the prime instrument for reaching inter-Allied agreement and issuing authoritative orders on disarmament measures. The United States Government and presumably the governments of the other occupant powers already have formulated their respective plans for the economic disarmament of Germany. The job of arriving at the highest common denominator of Allied agreement for the

period of occupation should rest with the Council rather than any other international body, except, of course, the meetings of the chiefs of state of the respective governments which have characterized the years of war.

In the first instance, agreements should be sought on the questions:

1. What types of military, institutional, financial, and research and scientific activities should be abolished and prohibited?
2. What types of economic and industrial operations in Germany should be entirely prohibited?
3. What types should be restricted? How and to what extent?

The previous sections of this report indicate the views of FEA Enemy Branch on these questions. The definition of disarmament policies and the issuance of orders prohibiting or restricting industrial and economic activities should be a continuing function. An order restricting a given operation in Germany may seem sufficient in 1946, but technological developments may later make necessary entire prohibition of the operation. Specific disarmament measures should be continually reexamined for possible obsolescence in the light of evolving technological changes.

While the members of the Control Council under instruction from their respective governments should be the final arbiters of disarmament measures, the diversity and complexity of its tasks require substantial delegation of functions in this field as in others. The Coordinating Committee of the Council can probably dispose of many of the questions arising in connection with disarmament, but would need staff assistance for the planning and supervision of most disarmament measures. Accordingly, it is suggested that the Coordinating Committee establish a unit within its staff called the Disarmament Planning Staff (or some other suitable designation), to be composed of representatives of each of the four powers represented on the Coordinating Committee.

The functions of the Disarmament Planning Staff would include the following:

1. To receive, study, and under the general authority of the Control Council, negotiate for Allied agreement such plans as are forwarded by the governments of the respective occupants;
2. To submit to the Coordinating Committee for its approval and submission to the Control Council such parts of the plans as are agreed to within the Planning Staff;
3. To submit to the Coordinating Committee for negotiation in that body such parts of the plans as remain unresolved;
4. To receive from the Director of Intelligence and the intelligence branches of the several divisions reports, inventories, capacity data, and other information pertinent to the preparation of detailed disarmament measures;
5. To prepare in furtherance of agreed inter-Allied plans detailed measures of disarmament (to be approved by the Coordinating Committee and the Control Council);
6. To advocate before the Coordinating Committee or the Control Council, when called upon, the requirements of disarmament against assertions of conflicting requirements of reparation, of the occupation forces, or of the civilian economy;
7. To coordinate the activities of the divisions under the Allied Control Council insofar as they relate to the disarmament program.

8. To submit reports to the Control Council concerning compliance with the disarmament regulations and over-all disarmament policies, and the adequacy of disarmament measures and techniques in the light of technological developments.

9. To appraise continuously the appropriateness of disarmament measures in the light of changing industrial and military techniques and to recommend any necessary changes in the disarmament measures for this reason.

When the Control Council has reached agreement on the types of organizations to be abolished, activities to be prohibited, and economic and industrial operations to be (*a*) prohibited and (*b*) restricted, the Council should issue and cause to be publicized appropriate orders reflecting these decisions.

A simultaneous step would be to designate specific plants and equipment for (*a*) destruction and (*b*) removal. On the basis of surveys and inventories already in progress (together with additional reports and information to be furnished by the Intelligence units), the Disarmament Planning Staff should see to it that the disarmament branches of the Army, Naval, and Air Division, the technical branches of the Economic Division negotiate agreed plans, industry by industry and zone by zone, designating specific plants and equipment for (*a*) destruction and (*b*) removal. The task of selecting specific plants and equipment for removal or destruction should be performed by the occupation authorities. The Technical Industrial Disarmament Committees felt incompetent to deal with this question. The choice of specific plants and equipment for removal or destruction will often be dependent on information available only in the area or zone and will involve an exercise of administrative discretion essential to the successful administration of the occupation program. The Disarmament Planning Staff should develop policy criteria to be approved by the Control Council to be used as a guide in the determination of specific cases. (See sec. VII.) Unresolved questions should go to the Coordinating Committee, and ultimate approval and issuance of orders should rest with the Allied Control Council.

At this point, perhaps even more acutely than in the preparation of general plans, questions will arise as between the objectives of disarmament and those of other requirements. Essentially there will be four major types of claims against the German economy:

1. Disarmament.
2. Reparation.
3. Requirements of occupation forces.
4. Requirements of civilian population.

The various claims, particularly when considered from a long-range viewpoint, may not be conflicting; and in some cases they may actually support one another. For example, a reparation demand for the removal of a plant may coincide with, and offer the means for effectuating, a disarmament demand for the same removal. But, especially at the outset, many cases are bound to arise where the pressures of the various requirements will actually or apparently conflict. A reparation demand for certain end products or a demand for supplies for the occupation forces may conflict with a disarmament demand for the destruction or removal of the plant that manufactures them. A demand for employment of German civilians will often, especially in

the short run, be raised against a disarmament demand for the destruction, removal, or restriction of the facilities that might provide such employment.

The Coordinating Committee and, in the last instance, the Control Council must be the forum for the settlement and determination of conflicting claims. The Disarmament Planning Staff should be prepared in such cases to represent and advocate the disarmament demands. If special representation seems appropriate for the other types of demand, the Coordinating Committee or the Control Council can call upon the appropriate division or branch to submit a report and argument.

Still another kind of requirement should receive special treatment. Some demands of disarmament and reparation may call for the dismantling or removal of facilities needed, at least temporarily, for the execution of the disarmament (and reparation) program as a whole. The most outstanding case will be that affecting transport facilities. Reparation claims will properly include demands for all types of transport equipment. Disarmament demands, moreover, will properly call for the destruction or removal of substantial parts of transport equipment and plant. But the removal and shipment of other plants, facilities, equipment, materials, etc., under the disarmament (and reparation) program as a whole may be frustrated, or seriously hindered, if disarmament or reparation claims against German transport are not coordinated with the execution of the entire program. Accordingly, it is suggested that the disarmament plans for scaling down and demilitarizing German transport be prepared initially by the Transport Division (with the assistance of the Reparation, Deliveries, and Restitution Division) of the Control Council, rather than by the Disarmament Planning Staff. The latter, however, should review and coordinate the transport disarmament plans in light of the total disarmament program.

Some pressures are likely to be exerted on behalf of reparation claimants, the occupation forces or others (supported among other considerations by a wish to find work for the unemployed) to repair, rehabilitate, or reconstruct facilities in Germany damaged or destroyed during the war. Such pressures may be especially vigorous in regard to the German transportation and communications systems. No new construction and no repair, rehabilitation, or reconstruction of substantial consequence in any restricted industrial field should be permitted without the previous submission of a full report thereon to the Disarmament Planning Staff or without the prior written authorization of the Coordinating Committee.

One general exception to the foregoing comments concerns the Control Council as the forum and medium for negotiating and executing the FEA external security program. (See sec. V.) Negotiations on this program are likely to involve other agencies in addition to the Control Council. The negotiation and execution of any such programs may require operations in Germany by the Control Council and operations outside by some international agency set up pursuant to agreement with the countries where German assets and personnel are located in substantial amounts.

E. Destruction of Plant Equipment and Products

In cases where the Control Council orders the destruction of plant equipment or products, the orders should be channeled through the Disarmament Branch of the Army, Naval or Air Division (according to the type of plant, equipment, etc., affected), to the appropriate zonal officers for execution. In connection with the execution of such orders, photographs (interior and exterior, in the case of plants) should be made before and after destruction. One or more representatives of the Disarmament Branch of the Army, Naval or Air Division, should make inspection before and after destruction (as well as observe the destruction itself) and make a written report thereof (supported by the photographs and a certificate by the local officer in charge of the destruction) through appropriate channels to the Allied Control Council.

F. Removal or Shipment of Plant Equipment, Materials, and Products (Including Reparation)

In cases where the Control Council has ordered removal or shipment of specific plant, equipment, materials, or products, at least two means of procedure are available. Where the removal order coincides with a reparation claim, the reparation machinery should be employed. In the allocation of plants to reparation claimants, full recognition should be given to disarmament aspects, i. e., proximity to Germany and ability to develop the industry to the exclusion of German influences. Where (after due notice to the reparation authorities) it is found that no reparation claim matches the removal order, the Reparation, Deliveries, and Restitution Division should be notified and instructed to offer the facilities for sale to Allied, neutral or other non-German interests outside Germany, though the reparation countries should be urged to acquire plants to be closed down, except armament plants. Where one or more bidders are found, the Control Council should designate which, if any, is to prevail. Considerations of international security and achievement of a stable European economy should be determining in such designations, regardless of who may be the highest bidder. If it is found that acquisition by none of the bidders would further these objectives, the Control Council should order the facilities destroyed. Where a suitable bidder is found and the proposed transaction is approved by the Control Council, the Reparation, Deliveries, and Restitution Division should proceed to effect the sale and account for the proceeds as funds available for reparation or as a foreign-exchange asset available for financing necessary imports. Extreme care should be exercised to prevent the acquisition of these properties by Germans or their cloaks.

Regardless of whether or not the removal is performed by means of direct reparation delivery or by means of sale to a third party, it would be desirable for some single instrumentality to handle the dismantling and shipping, and the financing of these services. The instrumentality for this purpose could be an international public corporation operating under the supervision of the Control Council with branch offices in each of the occupation zones. Or it could be a unit within the Control Council itself, with subordinate zonal

organizations. In any case, it should be staffed with suitable technical assistance and labor to perform the job of dismantling and shipping facilities and materials of all kinds from Germany to other countries.

As in cases of destruction, orders for removal should be executed in such a way as to provide an authentic and permanent record of the operation. Photographs should be taken before, during, and after the operation, and one or more representatives of the Transport Division (and/or of the Army, Naval, and Air Division) of the Control Council should observe and file a report on the dismantling, removal, shipment, and installation or other disposition.

G. Control of Residual Capacity and Operations (Including Research)

In addition to the destruction, removal, and shipment of plants, equipment, materials, and products, the Disarmament Program will require a set of controls over Germany's residual economic and industrial capacity in order to prevent rearmament, to insure the pacification of the German economy at home, and to prevent the reestablishment of Germany's economic or industrial hegemony in Europe or abroad. The controls for these purposes would involve the following major elements:

1. Licensing of industrial plant construction and research.
2. Licensing of certain regulated operations.
3. Allocation of energy and certain basic materials.
4. System of reports, audits, inspections, and investigations.
5. Control of imports and exports.
6. Control of spending and taxation.
7. Regulation of cartel, insurance, and other international financial transactions.
8. Public reporting and postaudits.

As in the case of the destruction or removal of German facilities and materials, the administrative machinery for the regulation of Germany's residual capacity and operations should be as simple and direct as possible. The Allied authorities in Germany should avoid undertaking detailed responsibilities for the administration and supervision of the minutiae of the German civilian economy. It is not the duty of the Allies to extricate the Germans from the consequences of their collective policies and practices over a period of decades. But it is the duty of the Allies to insure that Germany's economy and industry are reshaped in such a way as to render her unable (whether or not unwilling) to disturb or threaten international security. In discharging this duty the Allies should concentrate their limited administrative machinery on those strategic points in the German economy where the maximum control can be achieved with the minimum administrative burden. Moreover, administrative techniques for this part of the disarmament program should be such that a pattern, or at least the basis of a pattern, is established for an eventual transition to German self-government adequately conditioned to provide ample continuity of controls for preserving Germany and the world at peace.

Under the disarmament program, as described above, certain types of economic and industrial operations in Germany are prohibited, while others, not altogether prohibited, will be restricted. The restrictions may be of two kinds: (1) Quantitative, i. e., limiting the

amounts of productive and operational capacities to be permitted; and (2) qualitative, i. e., limiting the nature and kind of production and operation to be permitted. The fixing of such restrictions in the light of technological and other developments, must of course be a continuing evolutionary function.

As concerns quantitative restrictions, the administration of detailed plans calling for the destruction or removal of specific plants, equipment, etc., should provide most of the initial planning needed in fixing the amount and distribution of the productive capacities to be permitted; for the destruction and removal plans largely determine the residual capacity plans, and vice versa. They are two sides of the same coin.

As concerns qualitative restrictions, no extra planning machinery is required. With the technical assistance of the Economic Division, together with proposals from the governments of the respective occupying powers, the Disarmament Planning Staff should prepare detailed plans, industry by industry and zone by zone, designating the specific limitations on the nature and kind of production and operation that may be allowed in the residual facilities. When inter-Allied agreement is reached on such plans, the Allied Control Council should issue appropriate orders, specifying the commodities whose production is to be (*a*) prohibited; (*b*) limited in amount; (*c*) restricted in kind. The plans should be sufficiently detailed to allow the issuance of orders allotting quotas to each of the four zones.

Orders prohibiting all production of proscribed commodities and orders imposing restrictions in kind will require effectuation through the reporting and enforcement procedures later described. A restriction as distinguished from a prohibition of production may make necessary further steps. Where a ceiling is placed on quantity of a product to be produced in Germany as a whole, licenses setting a production ceiling for each plant will probably be necessary. Special controls will also be necessary over new construction. Where, as a result of controls, strategic materials or power are scarce, allocation may be necessary.

1. LICENSING OF NEW INDUSTRIAL CONSTRUCTION AND RESEARCH

New construction including major repair, rehabilitation, or reconstruction of production facilities will also require severe controls. The FEA program, being a plan for the prevention of rearmament as well as for disarmament, requires that new industrial plant construction be regulated to prevent evasion of the programs of military and industrial disarmament set forth in sections I and II. Licensing of all construction projects of an industrial character above a specified size will be necessary. Licensing of new machine-tool production is desirable on a related basis, being tied in with the control of industrial plant.

Licensing of research and engineering development in permitted fields will be necessary if the scientific disarmament program is to be effectively enforced. (See sec. III.) Until there is a responsible German government, such licenses must be issued by the occupying authorities. But even after the establishment of a German government, construction and research should be subject to licenses (carrying no assurance of materials or financing) issued by the occupying authorities. The administration and enforcement of such a system will

provide the best check upon German efforts to evade the program of disarmament.

2. LICENSING OF PRODUCTION WHERE PRODUCTION CEILINGS ARE SET FOR GERMANY AS A WHOLE (SEE SECTION II, SUBSECTION D)

Licensing of production in individual plants will be applicable to the steel, machine-tool, and similar industries important for war, whose operations are to be permitted to continue on a limited basis. It should be understood that the purpose of the licensing system is not to exercise specific control over the residual economy. The latter should be a task of the German government, when one is established. Nor is the proposed licensing system to be confused with the general "peddler's" type of license. The licensing of a radio station, prescribing basic conditions to be adhered to, violation of which results in an imposition of penalites is a closer analogue. The license would not constitute a positive authorization to any firm to produce any item—the allocation of materials for production of that item and the determination of specific production quotas would be made by German authorities.[3] The license would prescribe maximum ceilings, types of production, and operations authorized in the restricted fields, and the plants and facilities that may be utilized. Ceilings may often be based on a percentage of a base year or total tonnage. The Disarmament Planning Staff should, in conjunction with the Economic Division, determine the appropriate base year for the various items. Such a system of licensing will greatly facilitate enforcement of the disarmament directives. An Allied inspector, merely by checking the conditions set forth in the license, can get a picture of compliance. A licensing system will also prove invaluable in training Allied officials for postoccupation inspections, since those associated with its administration thereby acquire a thorough knowledge of local conditions and an eye for detail.

Under the guidance of the Disarmament Planning Staff, the Economic Division could be responsible for the issuance of licenses (in the name of the Allied Control Council). Regional (or local) offices of the Economic Divisions of the four zonal commands should be authorized to receive and forward through channels to the Economic Division of the Control Council applications (furnishing all necessary information) for licenses to produce or operate in an authorized way and at specified levels. Violations of such licenses and unlicensed operations in fields restricted by Control Council orders should carry severe penalties, to be prescribed by the Control Council (or the Coordinating Committee) with the advice of the Disarmament Planning Staff and the Legal Division. The licenses should be valid for a fixed period (in no case longer than 1 year) and should be subject to periodic reports, audits, and inspections, as described in a later section of this report.

Operations closely related to, but not always a direct part of, the industrial and economic enterprises to be prohibited or regulated should also be harnessed into the licensing system. Those involve chiefly technical training, research, experimentation, and so on. Such activities, if they serve the development of armament, munitions,

[3] The Control Commission, however, will be concerned with what the Germans do in at least one important respect. It will want to make sure that the German authorities do not pervert this licensing and allocation system to foster monopoly or restraints of trade, since freedom of competition and prevention of monopoly are basic features of Allied policy.

chemical or electronic warfare, or any other direct war purpose, will of course be entirely prohibited. All other such activities as indicated above should be carefully restricted, and none permitted without a license, specifying authorized purpose, terms, scope, facilities, and personnel. Arrangements should be made to publish the results of all research and related activities, except where the Control Council orders otherwise.

8. ALLOCATION OF ENERGY AND BASIC MATERIALS

Allocations of certain basic materials may be necessary to insure that the requirements of the occupying forces and reparation are met, that the disarmament program is effectuated, and that the remaining supplies yield the maximum benefit to the residual German economy. Upon the establishment of a German government, it should be made responsible for the detailed administration of the allocations system, including the allocation of controlled materials to individual plants and the determination of specific production quotas. The German government should be required to administer the allocation system in such a way, pursuant to a directive from the Allied Control Council, as to achieve the decentralization of the German economy, as required by the Berlin Protocol.

The Control Council need not undertake responsibility for the detailed planning and administration of the residual economy. To assume that responsibility might prove administratively back breaking and psychologically inadvisable. The Germans must learn again to assume responsibilities. Also, the Germans must come to identify their plight and difficulties with their own doings. They should be told that the responsibility for hardships due to a break-down in the residual economy lies with the German authorities. They should be made to realize that the Allies have made provision for the continued functioning of a minimum basic German economy and that unnecessary hardships are the result of German mismanagement or sabotage.

In entrusting detailed administration of the allocations system to a German government the Control Council should require it to submit, quarterly, in advance of allocation, to the Economic Division full information on the production ceilings, the amounts allocated, the specific purposes for which allocations are to be made, the production quotas for the components and end products, the name and location of the plants to which the allocation is to be made, the uses of the materials and other items, the quantities needed, and the available stock on hand. It is again emphasized that insofar as disarmament is concerned the Allied authorities may not need to superimpose their decisions on the German authorities as to the specific quotas or the specific plants to be utilized except in cases where that degree of control is substantially related to disarmament objectives. Indeed, the major disarmament objectives of such an allocation system can be served by its maintenance for only a few years, during which determinations of the quantity and character of items needed for a peaceful civilian economy are being checked and stock piles are being reduced to normal size.

Thus, the FEA disarmament program does not require burdening the Allied authorities with detailed determinations as to the residual economy or the maintenance indefinitely of a complicated system for the allocation of materials.

The present views of the FEA are that, in addition to coal and industrial uses of electric power, which are basic to any control, only the following materials need be restrictively allocated initially for purposes of the disarmament program:

1. Steel (including scrap)
2. Petroleum
3. Rubber
4. Heavy chemicals

The Economic Division should maintain a unit to keep accounts of all transactions in controlled materials. This unit should act as a clearinghouse for the certificates or other evidences to be required in transactions affecting controlled materials. No order or purchase of these materials should be permitted without the surrender of such a certificate, which should be returned through the zonal offices to the central unit.

4. REPORTS, AUDITS, INSPECTIONS, AND INVESTIGATIONS

The success of the disarmament program, especially of that part relating to the treatment of the residual economy, will depend very largely on the economic intelligence system of the Allied Control Council and of the four zonal commands. Both in the preparation of detailed plans and in their enforcement, the procurement, analysis, and use of economic intelligence will be all important.

It is contemplated that many of the divisions of the Control Council, as well as their counterparts in the zonal commands, will have their own intelligence branches. These can all contribute to the disarmament program. But they must be coordinated and their respective functions clearly laid out. The Director of Intelligence should be responsible for supervising and integrating the work of the several intelligence branches.

Forms of reports should be prepared on a basis that will make them as far as possible—

1. Uniform throughout the country as to each industry or other segment of the German economy;
2. Comprehensive and interrelated;
3. Susceptible to internal cross-checks;
4. Susceptible to mechanical analysis, through the use of punched cards, etc.;
5. Adapted to the prevailing German uniform accounting and cost-accounting systems.

For purposes of planning and enforcing the disarmament program, the reports (returnable on a quarterly or other periodic basis) should cover among other things: Inventories, production, purchases and sales, productive capacity, equipment, materials, services and labor, research, and so on. The forms should be distributed and returned through the zonal (or local) offices of the Intelligence Branch of the Economic Division. Severe penalties should be imposed for false or incomplete reporting or failure to file reports.

Complete auditing of all reports would not be feasible, but in order to prevent fraudulent and erroneous reporting, to test the accuracy of reports, and to supplement automatic cross-checks and investigations, a system of test audits is essential. Some enterprises should be audited with meticulous accuracy. The timing of these and other

audits should be arranged in such a way as to make their occurrence unpredictable. Where an enterprise is of critical importance, however, a regular, periodic audit may be necessary; and for enterprises placed in charge of Allied representatives, continuous audits may be required to insure effective control.

Inspections and investigation, will be needed as a further instrument of enforcement, for the audits are largely paper tests. Physical inspection of plants, equipment, materials, operations, etc., will be necessary to insure compliance with the restrictive orders and licenses of the Control Council. Such inspection, like the audits, should be timed to achieve surprise. Moreover, fairly constant investigation will be required to detect prohibited and unlicensed restricted operations. The building up and maintenance of a well-trained and permanent inspectorate and an adequate system of undercover intelligence is essential to any effective disarmament program.

The major burden of the various enforcement measures might be undertaken by the Intelligence Branch of the Economic Division, and the legal staff with the assistance of its counterparts in the zonal commands. But the intelligence branches of other divisions could effectively undertake certain parts of the work. For example, the Intelligence Branch of the Finance Division might handle the test audits. Some special unit will probably be required to handle investigations. However these functions may be assigned, it will at all times be essential for the Director of Intelligence to supervise and coordinate the work.

5. CONTROL OF IMPORTS AND EXPORTS (SEE SEC. II, SUBSEC. D)

In the past, imports of materials and products contributed substantially to Germany's war potential; exports were used to finance imports of excessive quantities of strategic raw materials which were stock-piled to enable Germany to withstand a blockade. Foreign trade, furthermore, became a mechanism for achieving economic domination over satellite countries. Accordingly, one of the major means of effectuating and enforcing the disarmament program, including the prevention of preparations for rearmament, will be a system of controls over imports and exports.

Under the disarmament plans and orders prohibiting certain operations and fixing limited levels of production in licensed enterprises, it may be necessary or desirable, as indicated above, for the Economic Division to establish through the appropriate operating branches arrangements for allocations of coal and electric power and certain basic materials. In addition this branch should prepare a schedule of ceilings on imports of all materials and products that will be consistent with the prohibitory and restrictive orders of the Control Council. Imports, whether or not included in the list of basic materials, should be subject to strict allocation for a period of years until stock piles are brought into line and statistical patterns of peaceful use are established.

Permitted schedules of imports and exports should be prepared as soon as possible. It is essential to plan a balanced trade program to provide enough exports to pay for minimum imports. The administration of such controls should be centralized in the Foreign Trade Branch of the Economic Division. Initially, this branch would

exercise rather complete control over all procurement and buying of imports and all selling and disposing of exports.

If United States policies in this field are accepted as Allied policies, the Allied Control Council should issue orders: Establishing the Foreign Trade Branch as the central Allied authority over imports and exports; prohibiting any German person or enterprise from engaging in any foreign trade except pursuant to regulations established by the Control Council; limiting imports to those authorized to meet minimum essential needs; limiting exports to amounts needed to pay for the authorized imports; prohibiting exports to countries other than members of the United Nations, unless specially authorized by the Control Council.

After a German government is established, it is anticipated that it will be given responsibility in the first instance of making choices of goods to be imported and exported subject to disarmament and reparation programs, over-all limitations on total amounts, and political policies regarding markets and sources of supply. Further, as security factors permit, complete monoply control can be relaxed gradually in favor of Allied supervision under a licensing system or other arrangements.

The Foreign Exchange and Blocking Control Branch of the Finance Division of the Control Council would have authority to handle foreign-exchange transactions. If United States policies in this field are accepted by the Allies, the Control Council should issue orders establishing the Foreign Exchange and Blocking Control Branch as the exclusive Allied authority in Germany to handle foreign exchange transactions; prohibiting any dealings in or possession of foreign exchange by any German person or enterprise; prohibiting the extension of credit by any foreign person or government to any German or German enterprise.

Since commercial exports are to be permitted for the purpose of providing foreign exchange to buy imports, foreign exchange proceeds from exports must be made available by the Foreign Exchange and Blocking Control Branch to pay for authorized imports. Pending creation of such proceeds, payment for authorized imports should constitute a first charge against any exports ahead of reparation from current production (excepting removals of plant and equipment). This would be necessary in order to avoid the establishment of any permanent pattern of foreign credits. No foreign exchange should be made available for any imports not authorized by the Foreign Trade Branch.

If the Foreign Trade Branch considers it necessary, it could call upon the inspection and investigation unit (mentioned previously) to conduct whatever special inspections or investigations may be required at the ports or at border stations; but the regular zonal authorities at these points should ordinarily be able to handle routine physical checks.

It is suggested that in order to support import-export controls and to simplify Allied administration in this regard, the Allied Control Council, as the supreme authority in Germany, might negotiate and enter into agreements with the states with which commercial exchange is to be conducted. Such agreements with other governments could provide for: Terms necessary to establish trade relations according to the regulations for the control of foreign trade under the Control

Council; border inspections in the case of states having a common border with Germany; prosecution by the respective states of individuals for infractions of the trade agreements. Such provisions would make smuggling and other illicit dealings with Germans or German enterprises a domestic crime in states outside of Germany.

A detailed plan for the postsurrender treatment of German foreign trade, prepared by an interagency group of experts at the request of FEA, is contained in TIDC Report No. 20/27.

6. CONTROL OF SPENDING AND TAXATION

In order to make an Allied disarmament control over Germany fully effective it may be necessary to supervise certain features of German spending and taxation.

It is now recognized that a major error of the Allies after World War I was to permit international loans to Germany and to German industrialists without adequate restraints to prevent their use in rebuilding or building of plants and facilities in the war industries. The Allies may wish to supplement the licensing of industrial construction by some control over both public and private financing of new industrial development. To make control over German financing effective, it is equally necessary to supervise the German Government's budget allocations, expenditures, and tax policy. The Germans used their tax policy, through tax forgiveness, undervaluations, subsidies, tariff, and exchange manipulations to favor the potential armament producers. They used public funds, openly and secretly, to further armament, military research, and the training of a military machine.

The basic responsibility for the preparation of the German budget, and for tax policy and its administration, should be left to the German Government, but subject to pre- and post-audit by the Finance Division to insure against any hidden support of activities related to war preparation. The German Government should be required to make full disclosure of its program of spending and of taxation.

The Finance Division and its zonal representatives should exercise control over the budget of the Reich, the states, provinces, counties, and municipalities. This control implies, on the one hand, that certain expenditures should be forbidden, that shifting of appropriations between classes or groups of expenditures and subdivisions should not be permitted, that all revenues and expenditures should be published in detail for disclosure to the Allied Control Council; on the other hand, the Allied Control Council, through the Finance Division, should have power to audit all public budgets (with corresponding power of inspection and investigation) and should exercise these powers continuously and extensively.

Supervision of Germany's taxation and lending and spending program is also essential if run-away inflation with resulting dislocation and chaos is to be avoided and if the German people are to learn, through taxation, as well as bombs, that war is a costly enterprise. The responsibility for avoiding inflation lies with the German Government and German people. The Allied authorities should impress upon the German Government and make it clear to the German people that the responsibility for and the consequence of inflation will fall

upon them. Nonetheless, the Allies should exercise sufficient supervision so as not to permit the success of the disarmament program and occupation to be endangered.

7. REGULATION OF CARTEL, INSURANCE AND OTHER INTERNATIONAL FINANCIAL TRANSACTIONS (SEE SEC. IV)

Domestically and internationally, German cartels and combines, particularly in the heavy industries, have traditionally acted as the economic counterpart of the Junker militarists. Their activities and practices for more than 50 years demonstrate that they consider their interests are best served by armament and aggression. They helped bring Hitler to power and geared the German economy at home and abroad to further his plans for world domination. Effective disarmament and prevention of rearmament require the break-up of these cartels both at home and in their international relationships.

The first step toward this objective will be to complete the files of information which the Allies have been developing, including an analysis of the records of main division III of the economics ministry, which formerly dealt with cartel questions. In addition to such data as may be gathered by the various intelligence units, a systematic and concentrated census should be undertaken of all German domestic and international cartels and cartellike arrangements, including agreements, subcontracts, pooling of patents, interlocking directorates, stock interests, affiliations, etc. The census can be prepared partly on the basis of compulsory reports (similar to those required of German enterprises in regard to industrial capacity and production), but vigorous independent investigations and detective work will also be necessary to comb company books and records and to relate seemingly unrelated fragments of information.

But it will not be enough to promulgate such a statute and prosecute a few offenders. Individual plans for breaking up specific cartels and cartel-like arrangements and for preventing the formation of any new arrangements of similar character will have to be prepared. Such plans should include provisions for the disposition of patents and other properties, prohibitions against restrictive and other types of agreements, regulations affecting stock ownership, interlocking directorates, registration of certain contracts and transactions, etc. Such specific plans striking down the major combines and disposing of their paraphernalia of monopoly will be an important second step toward any effective application of the policy on a general scale.

In order to carry out the anticartel and anticombine policy recommended in the FEA disarmament program (sec. IV) the Allied Control Council should promulgate a statute providing for the repeal of legislation or decrees legalizing combines, cartels, and cartel-like organizations, requiring their dissolution, and prohibiting their reestablishment. The legal officer of the Control Council should be responsible for enforcement and for prosecution of violations under the anticartel statute. Provisions should be made for the inclusion of personnel experienced in antitrust enforcement within the Allied military tribunals for the adjudication of cases involving violations of the anticartel statute.

Controls in this field will require continuous vigilance. Continuous checks on intercompany financial transactions (domestic and inter-

national) and on other relevant developments will have to be maintained.

In order to support the performance of Allied programs regarding German cartels and combines, it is suggested that international agreements with other states might be negotiated whereby the latter would undertake to prohibit their nationals from entering into cartel and cartel-like arrangements with Germans and German interests.

Presumably, the Finance Division through its Foreign Exchange and Blocking Control Branch will control all international financial transactions (including stock purchases and sales, contracts to purchase or sell, transfers of funds, guaranties, etc.) by Germans or German interests. Such controls can probably best be exercised through a blocking and licensing system. In this connection the Finance Division should make particular scrutiny of transactions of organizations known to have had any cartel connections.

The international insurance business (reinsurance as well as direct underwriting) has been exploited by German interests as a means of building up foreign assets abroad and as a channel for obtaining intelligence respecting the war potential of other countries. German insurance companies should be prohibited from underwriting risks outside of Germany, whether in the form of direct insurance or reinsurance. All German interests in non-German insurance companies should be severed.

8. PUBLIC REPORTING AND POST AUDITS

The history of the failure of the Allied Disarmament Commission after the last war reveals that a lack of public information with resulting apathy played a major role in the break-down of the Allied security program. That must not happen again.

Effective administration of the disarmament program, including maintenance of the morale of those charged with occupation responsibilities, will require a sympathetic and enlightened public opinion the world over. It is important to the success of the disarmament and occupation programs that the people in the Allied countries have faith and confidence in the integrity and effectiveness of the control program. The success of the American representation, and it is assumed that the same is true of the others, will depend to a great extent on the trust which the people back home will have in the control program and its administration.

The Subcommittee on War Mobilization (the Kilgore committee) of the Senate Committee on Military Affairs in its preliminary report on Germany's war potential recommended:

> 2. Periodic submission by the United States representatives on the Allied Control Council through the Office of the President of public reports to Congress on the progress of German disarmament and control. Arrangements should be made now that these reports be submitted annually for the next 15 years. In addition, it should be provided that for the first 3 or 5 years, quarterly interim reports be made. It is suggested that the first annual report be made on January 1, 1946.

This excellent suggestion should be followed so that the general public may be kept aware of the problem and fully informed of any obstacles no matter what persons or nations are responsible.

The reports should contain full information on the progress of the disarmament program with detailed information as to de-Nazification

and elimination of dangerous institutions, plant removal and destruction, amount of reparation delivered, operations of the residual economy and German standard of living, control of German foreign assets, and effectiveness of the Allied control measures. The reports should aim to give the American people a clear understanding of the progress and difficulties involved in the accomplishment of German disarmament. The American representative on the Control Council should seek agreement within the Council for the preparation of such reports by each of the occupying powers. The reports to be of value must deal with conditions in all of Germany.

In order that the American people, and other peoples as well, may have the utmost confidence in the formulation and execution of the disarmament plan, it would be desirable for a high-level legislative or executive committee to function as a sort of an inspectorate general.

It should be the responsibility of such a watchdog committee to conduct postaudits of the progress achieved in the disarmament field and report to the authorities concerned as well as the people. Such a committee, with dignity and status, would prove an invaluable asset to the United States military and civilian authorities abroad. It would contribute much toward dispelling gossip, rumors, and doubt, and instilling confidence in the purposes and administration of the control program. Where questions concerning administration arose, such a postaudit committee would serve to focus the issues for review.

II. Conclusion

The disarmament program described in this Report, when translated into the necessary administrative procedures, looks to a long-term active United States participation in the establishment and maintenance of controls of Germany's power and capacity to make war. The establishment and operation of these administrative controls within Germany during and after the period of strict military government will require a civilian administration comparable to any one of our great war agencies, except that its purpose will be to control for peace rather than war. There should be included, however, in this civilian administrative corps of experts, capable of establishing and carrying on the disarmament controls envisaged, a number of experienced military personnel, especially familiar with the technical phases of arms, ammunition, and implements of war. In addition, there will be a need for a military police force to handle the security aspects that will undoubtedly arise in connection with the enforcement of the disarmament program and the adequate protection of the control administration.

The training and establishment of this long-term or semipermanent administrative organization must be accelerated so that it can take over the security problem by the time military government is to be abandoned and German governmental machinery erected to handle most of the normal functions of government, subject, of course, to the Control Commission on disarmament, reparation, and other Allied programs.

This new semipermanent administrative organization is not now in existence. Although commendable steps are being taken in that direction, which it is not the purpose of this Report to analyze in

detail, a studied and determined effort to direct the Allied occupation in Germany along the lines indicated will be required regardless of the ultimate form that the German state or its governmental machinery may assume. Only such a course is compatible with long-term active American participation in the control of Germany's power and capacity to make war. Although it is not the purpose of this report to outline all of the steps and considerations involved, certain considerations are relevant by way of conclusion:

1. Both the military police force and the civilian control administration (which will include ordnance and other military experts) must be trained and recruited as a permanent governmental staff. To proceed with this staffing and organization job on the hand-to-mouth basis typical of the usual temporary or emergency organization will lead only to a situation in which our interests will suffer attrition. As combat troops and military government officials are withdrawn, a new staff, recruited and trained on a career basis, is necessary.

2. It is wholly unlikely that a control staff and auxiliary military police force, competent in quality, purpose, and tenure, can be created unless pay and facilities are attractive. Control of a hostile foreign environment is not attractive at best and the organizational operation is doomed to eventual failure unless an unusual and extraordinary degree of energy and incentive is available. The organization of this administration and its attendant police force certainly is one of the most important long-term challenges to the Allied Nations and their respective governments. Many suggestions for meeting this problem have been made and are worthy of consideration. In our own country, an independent operating agency with its own appropriations and pay brackets high enough to attract competent personnel has been suggested. That agency would include the personnel needed here and abroad to carry on this operation. It is not likely that disarmament can be handled as a bureau function of one of the old line departments, unless unusual powers and authority are given to the head of the bureau. The possibility of a specially trained military police force, recruited and serving on a voluntary basis, should be canvassed. Provision might be made for both civilian and military control forces to bring their families with them or have special furlough privileges.

The foregoing suggests that in the United States special administrative arrangements and an unusually powerful administrative organization in Washington will be necessary to serve as the generating station for the overseas organization. An adequate staff in Washington capable of recruiting and training a disarmament control staff and giving it adequate operating direction, consistent with the over-all policy and interest of the United States, is not the least important administrative measure which must be provided. Hence, it is important to locate the long-term responsibility for this operation either (*a*) by allowing it to continue in the War Department on a long-term basis, which would then be authorized to plan, on its own, the transition involved, or (*b*) in the State Department where new and special arrangements far beyond the scope and proportion of our

foreign service would be required, or (c) in some special independent agency responsible to the President, the Secretaries of State and War, and other Cabinet officers importantly involved. It is not too early to fix definitely this responsibility and construct the civilian administrative organization and its military police auxiliary that will take over from military government the discharge of United States responsibility in Germany.

SECTION IX. POSTOCCUPATION DISARMAMENT CONTROL

CONTENTS

	Page
A. The need for postoccupation controls	313
B. Postoccupation control a Big Four function	314
C. Postoccupation control must be effected within Germany	315
D. The status of a Permanent Disarmament Commission	315
E. The formal basis of the controls	316
F. The powers of the Permanent Disarmament Commission	317
G. The administration of the controls	318
H. A German Ministry of Disarmament	319
The problem of sanctions	319
I. The scope of the controls	321
J. A system for preventing the production of military items and key industrial products	321
K. Separation of the Ruhr-Rhineland under international administration	322
L. Scientific research control	323
M. Foreign trade and external security controls	323

Section IX

POSTOCCUPATION DISARMAMENT CONTROL

A. The Need for Postoccupation Controls

Implementation of the FEA disarmament program will occur in two phases: the period of full scale occupation and control, and the time to follow the withdrawal of large armies of Allied troops from Germany when there will be a restoration of German government at the various levels.

It will not be enough to remove and destroy existing war plants, outlaw German military and party leaders, and punish war criminals. The world needs security against a re-creation of German war potential after Allied troops have come home from Germany. What the Germans may do after Allied military control is removed is of even greater concern to the world than the menace in their present undestroyed potential. The adequacy and firmness of the postoccupation safeguards will be a measure of Allied understanding of that danger and of Allied determination not to allow it to grow.

Disarmament in the occupation phase is made easier by the mere fact of complete Allied control of all German activity, which makes it possible to turn to account the other programs provided in the Berlin Protocol in the present initial stage of disarmament. The disarmament program, which is given priority over all others by the Berlin Protocol, provides a pattern to guide the execution of the related programs which the Potsdam agreement expressly states shall be tools of disarmament. So long as there is total control of Germany, therefore, the rate and extent of disarmament is limited only by the will of the Allies.

The end of full-scale occupation will quite change this picture. The troops will no longer be in Germany. The utility of the Potsdam programs as instruments of disarmament will be at an end. There will be some real restoration of German self-government which will present political problems of resistance to Allied purposes and control in Germany and questions of the legitimacy of such resistance. Allied decisions can then no longer be unilateral over quite so large a range of matters affecting German destiny as during occupation. Ultimately a program of long-term control is dependent for success on its support by world opinion and must be of a kind to command that support readily.

It would be idle to suggest that the establishment and maintenance of enduring safeguards against renewed German efforts to build up a war machine will be easy. They will be more difficult to keep going than the current phase of disarmament. The latter is powered by the persisting momentum of the recent military effort. Long-term control will find the tide running the other way. Utopian illusion and political disillusion will be its chief enemies. Yet if the war was worth fighting its victory is worth saving, especially since the cost

of control will be incomparably smaller in money and effort than that of a new war in which victory may again be doubtful.

The difficulties of postoccupation control will be needlessly increased if much unfinished business is left to be done that should have been completed during the occupation. There should be a continuation of military occupation at least until the major necessary removals and destructions have been made, demilitarization has been achieved, and a real measure of institutional disarmament has been effected. If possible, occupation should not end until the rest of Europe has achieved a substantial economic independence from Germany and is well along on the road of economic reconstruction and of rebuilding its defenses against German aggression. In Germany, the bases of a peaceful economy should have been laid and the economic and industrial roots of aggression extirpated. The task of postoccupation control will be difficult enough if limited to guarding against German efforts to upset the new European balance and to depart from approved paths of development.

B. Postoccupation Control a Big Four Function

The end of occupation is not likely to be an appropriate time to turn over the responsibility for preventing German aggression to the United Nations Organization. The postoccupation disarmament controls of Germany will still form part of the measures for liquidation of the war and, as such, will not be part of the task of UNO. The big powers are, and for an indefinite time to come must continue to be, the guardians of peace against Germany. As Mr. Stettinius wrote in his Report to the President on the Results of the San Francisco Conference—

> The four powers which signed the Moscow Declaration never intended that the world organization to be created should be charged with control over the defeated enemy, at least for a considerable time * * * the effectiveness of enforcement measures and the success of the Organization would probably have been jeopardized if this had been tried.

Elsewhere in the same report Mr. Stettinius wrote:

> Article 107 is concerned with the enemy states in the present war. By this provision the authority and the responsibility for the enforcement of the terms imposed upon those states and for the measures to prevent them from again menacing the peace are to be left to the victorious states. The responsibilities which the Security Council may have in respect to these enemies, and the time and manner of the transfer to it of those responsibilities, are matters to be decided at a later date.
>
> The actual duration of the periods envisaged in these two articles cannot now be foreseen.

It is nevertheless of the utmost importance to broaden the political base of the program by associating the UNO with it. This can be done by giving the UNO auxiliary functions in connection with German disarmament without giving it direct charge of the program at once. Such a step may serve to smooth the way to eventual assumption by UNO of entire responsibility for German disarmament when its strength is equal to the task. It can also serve to enlighten world opinion which must learn to understand and must approve the objectives of the program.

A lively public awareness of the importance of German disarmament can be further facilitated by including in the international instrument

establishing the disarmament controls a succinct statement of the objectives of control and by provision for wide dissemination of frequent and regular reports on the results of control operations.

C. Postoccupation Control Must Be Effected Within Germany

The choice of kinds of postoccupation controls to set up depends on (1) the extent to which the locus of administration must be Germany itself, (2) the instrumentalities, German and non-German, that would be needed, (3) the relation of Allied program and controls to the body of German administration and law, (4) the procedures—direct and indirect—to be employed, and (5) the sanctions at Allied command. The method here recommended involves detailed controls in Germany itself, considerable staff, a close relation with the German administrative and legal apparatus and procedures tightly woven into the fabric of German life, and local sanctions.

Unless the sanctions for disarmament violations are to be transferred altogether from the internal to the international level, a transfer which involves letting evils flower fully before acting instead of nipping them in the bud, disarmament must be enforced on the spot by the Allies. Even with internal inspection, international sanctions against threats of aggression, while on paper a seemingly satisfactory middle ground, are unlikely to be effective. Internal controls limited to inspection can never be comprehensive and deep-reaching while international sanctions are not so flexible as enforcement on the spot. The rigid disproportion between a violation and the international penalty may result in reluctance to set machinery of enforcement in motion with the consequence that it may fall into eventual disuse or be used too late. Some internal controls in addition to the mere right of inspection of what is done in Germany are essential.

D. The Status of a Permanent Disarmament Commission

The postoccupation disarmament controls within Germany should be administered by a civilian continuation of the Allied Control Commission. This Permanent Disarmament Commission should be the bearer of Allied supreme authority in Germany. This should be clearly understood in order to make its status unambiguous in relation to German and Allied authorities. Much mischief was caused after the last war by the ability of the German Government to block action by playing on the confused relations of authority between the arms control and the Conference of Ambassadors. Whatever powers the Permanent Disarmament Commission is given, it should be able to exercise without having to refer to any other organization. It is especially important that a German government should not be able to go over its head. This was recognized in a parallel situation at the San Francisco Conference where the Technical Committee dealing with transitional security arrangements voted unanimously on the motion of the United States, to insert in its report an understanding that the enemy states should not have a right of recourse to the Security Council or the General Assembly until the Security Council granted them that right. A German government should not have a right to carry its cause over the head of the Permanent Disarmament Commission to the four Governments.

Moreover there is no legal middle ground between full Allied authority to effectuate the disarmament of Germany and a full and unconditional German sovereignty. In the achievement of disarmament there can only be administrative compromise but no averaging of international and local authority. The time may indeed come when after a complete political, social, and economic reorientation of Germany, the powers will wish to reconsider the question of a surrender of their authority over Germany and her admission to the family of nations in a status of equality. Until then there must be a determination to do everything necessary to achieve objectives which a tragic experience has shown to be necessary to world peace.

Questions of policy will undoubtedly arise which the Permanent Disarmament Commission will find it necessary to refer back to the Allied Governments. Such references should be held to a minimum. While the Permanent Disarmament Commission can probably not be made an autonomous international organization until the responsibilities for German disarmament are transferred to the UNO it will operate much more efficiently and expeditiously if in practice its activities can be made to approximate that ideal.

Its decisions should not be taken by unanimity. The policy of German disarmament having been unanimously settled by the powers, operations within the framework of that policy should be treated as procedural questions to be determined by a majority vote. This will be particularly important since the zoning of Germany will be at an end and present possibilities of unilateral action against emerging dangers will no longer exist.

E. The Formal Basis of the Controls

The form of the international instruments in which the postoccupation controls are established should express these basic fundamentals clearly. While in the past, peace between belligerents has usually been restored by treaty, the present situation is so unlike the usual termination of hostilities that precedent affords little safe guidance. It may be better in this instance to ignore the superficially relevant rubrics of the lawyers in order to meet the needs of the situation.

The use of a treaty form with Germany would be unsafe because it could be construed as a recognition of the sovereignty of the new German state. The point has more than theoretical importance. One important presupposition of a treaty is the sovereignty of the parties. The Potsdam agreement makes clear, however, that supreme authority in Germany is excerised by the occupying powers. The German state, for purposes of international relations, has ceased to exist and a new one will come into being only when Germany is admitted into the family of nations again. The withdrawal of Allied forces from Germany will not be followed for a long time by such an accolade, and no room should be allowed for the theory that it signifies a surrender of supreme Allied authority over Germany.

The canons of treaty interpretation, moreover, lend themselves to abuse by the evilly disposed. In the courts of Germany, those doctrines have been perverted to justify international irresponsibility, by making the state the sole judge of its obligations. This was carried so far as to make punishable for treason German citizens who contested official views of the obligations laid down in the disarmament provisions of the Versailles Treaty.

The disarmament controls must be protected against sabotage by legal subleties of this kind. It must be clear to every German, official and private, that Germany's disarmament obligations are the very warp and woof of her national life, that they override every other law, and that the continued national existence of Germany is dependent on their fulfillment as the first patriotic duty of every German citizen. This will involve an overthrow of the entire German tradition of blind allegiance to the state and will require, among other things, a repeal of firmly established parts of German law and judicial rulings. Perhaps the best way to bring about that result is by establishing the controls in a new formal assertion of supreme Allied authority over Germany which will build them into the very bone of the legal structure of the new Germany.

Several instruments will be needed, one an international act of supreme Allied authority over Germany which would make disarmament the cornerstone of the future German constitutional and legal structure, the second an international agreement among the occupying powers stating their obligation to act in unison to keep Germany disarmed. An act of assent to the disarmament of Germany subscribed by a valid German government should also be obtained. These should be supplemented by a UNO agreement requiring the members of that organization to facilitate any measures for the disarmament of Germany in which their cooperation is needed. This supplementary universal obligation will be particularly important in maintaining export-import controls and an effective external security program and, as already indicated, in mobilizing world opinion behind the enforcement of German disarmament.

F. The Powers of the Permanent Disarmament Commission

Whatever the substantive scope of the control program, there can be no restrictions on the powers necessary to make those controls stick. Moreover, the application of the controls may need to be varied as changing economic and technical developments of significance in the progress of the arts of war and science require.

The powers of the Permanent Disarmament Commission should be framed in the broadest terms, therefore. It should be empowered (1) to define and change in its discretion the standards to which Germany is to be held in the five fields of disarmament; (2) to hold hearings and/or to make general and particular determinations concerning the application of such standards; (3) to make inspections and audits of facilities, equipment, records, etc., whether governmental, public, or private; (4) to require reports, production of documents, and appearance of witnesses; (5) to appear before the courts and administrative bodies, inspect governmental and judicial files and records, intervene in proceedings, judicial and other; (6) to issue orders; (7) to take direct action against prohibited installations and activities; (8) require governmental aid for its operations; (9) to give directions to officials at every level; and (10) to review and revise governmental policies, action, and determinations affecting disarmament.

So far as possible the Permanent Disarmament Commission must be made independent of the German government in the exercise of the powers enumerated above. Such independence cannot be achieved unless the Commission can dispose of a staff adequate in numbers and qualifications for its tasks. Personnel should not be recruited solely

from the nationals of the four occupying powers. Much expert knowledge can be found in the other United Nations, particularly of Europe. The agents of the Permanent Disarmament Commission, as well as the members of the Commission itself, should possess quasi-diplomatic status and be immune to German governmental process and exempt from any need to apply to the German Government for permission to enter or leave Germany. In the conduct of operations deemed necessary by the Permanent Disarmament Commission for enforcement of disarmament rules and regulations, the Commission's agents must be empowered to act independently of the German Government and its officials. In their rights of access to official and private files and records, inspection of facilities and equipment, etc., the Commission and its agents should be free to act without prior consultation with the German Government and without having to call on it to make preliminary arrangements to facilitate such operations.

G. The Administration of the Controls

Direct administration without an auxiliary use of Germans would be impossible for mere lack of personnel. Moreover, the prospect of eventual full German self-government must not be lost to sight and the need to associate the Germans in advance with the disarmament controls. The question to be answered, therefore, is the proportions in which direct and mediate administration shall be mixed in the operation of the disarmament controls.

For purposes of preliminary analysis of the question just stated disarmament control may be taken to involve four operations, viz, definition of standards, interpretation of standards, investigation of performance, and application or enforcement. The proportions in which direct and mediate administration are to be mixed in these operations cannot be determined a priori. It is clear, however, that they will not be the same for each. Some general considerations may be set forth; to go beyond these involves analysis in some detail of each operation and of the way it impinges on the machinery for the government of the country.

The definition of disarmament standards is essentially a legislative or policy-making function aimed at achieving the established purposes of the Allies and limited only by them. Admission of a German government to participation in the exercise of this function except as an advocate or petitioner is not conceivable at an early stage. Cautions concerning the treatment of problems of collateral German influence have been expressed earlier.

Interpretation presents more difficulties because of its relation to application and investigation into both of which Germans will perforce be drawn. While the final word will doubtless rest with the control agency, interlocutory German judgments would seem to be unavoidable, both in judicial proceedings for violations of disarmament standards and in the exercise of administrative discretion in their enforcement. The importance of this problem will obviously vary with the scope of the disarmament controls to be maintained.

Investigation (inspection, surveillance, etc.) raises the problem of mixed administration in large proportions. The control agency will need its own agents of surveillance, both public and secret. Problems of relations with German police, judicial, and administrative authorities will still have to be met, since it will be necessary to rely heavily on

Germans in surveillance. Spot checks of industrial installations will not suffice. If a German or mixed system of surveillance is not already implicit in the Potsdam agreement, its establishment after occupation ends (other things being equal) is hardly to be avoided. This, however, will merely add to the problem of surveillance of factory installations that of surveillance of a German government.

This shift comes more clearly to the fore in considering enforcement, a large part of which must operate through German judicial and administrative machinery.

As will be evident from the foregoing, the points of contact between the control agency and German machinery will vary with the scope of disarmament, the powers of the control agency, and the methods of administering the program. In the present disorganized state of Germany, and in the absence of any indication whether there will be a return to something like the Weimar system, it is not possible now to graph the points of intersection. In planning the controls, however, the efforts should be made to group the technical and technological requirements of control under broad rubrics and suggest the general nature of the Allied and German machinery needed to meet such requirements. This involves breaking down the process of control for each prohibited and restricted activity, noting any special features of each step in the process. It will then be necessary to determine what administrative machinery will be needed for the control of the designated activity. Is there an appropriate German public or semi-public agency within whose sphere such control falls? What adaptations will be needed? Must machinery be created de novo? These questions, the answers to which are likely to remain elusive until the structure of German government crystallizes, are of especial importance in considering interpretation and application of standards.

H. A German Ministry of Disarmament

The administrative relations between the Permanent Disarmament Commission and a German administration will be greatly simplified if German auxiliary disarmament functions can be brought together under one roof for single direction. The head of that office should be a member of the German Cabinet. While the Permanent Disarmament Commission would deal directly with German Government officers at every level from the Cabinet officer to the local policeman, it would simplify procedure if functional responsibility for German auxiliary administration could be centered in one place. Just as disarmament must override all other provisions of the German constitutional structure, so the powers of the German Disarmament Minister must override the administrative determinations of his colleagues insofar as they are declared by the Permanent Disarmament Commission to affect disarmament.

THE PROBLEM OF SANCTIONS

As was pointed out earlier, the theory underlying the post-occupation controls recommended in the present section is that the Allies must rely primarily upon local sanctions in the enforcement of German disarmament. This means that as a rule, violations of the rules and regulations issued by the Permanent Disarmament Commission must be punished through German administrative and judicial

machinery. If the German machinery functions effectively, the tasks of the Permanent Disarmament Commission, while large enough, will be limited to the definition of disarmament standards, their detailed interpretation, and surveillance.

It would be naive, however, to suppose that the punishment of offenders who in some instances may themselves be high Government officials, can simply be turned back to the Germans. The disarmament role played by the German judiciary and administrative officers after the last war amply justifies skepticism concerning the wisdom of such a course and mistrust of its results. Nevertheless, if the Permanent Disarmament Commission should have to recruit a staff to duplicate the enforcement machinery of the German Government or to take over the task of enforcement and punishment itself, the difficulties of administering the program would be multiplied enormously. That alternative, moreover, is more likely than any other Allied action to put up the back of nationalist resentment and move the Germans to exercise their ingenuity in sabotage of the program.

To meet this situation, foresight suggests the following possibilities: A first and obvious step, which is already under way, is a purge of German judicial and administrative machinery. For disarmament purposes, which will arouse more than merely Nazi resentment, this is not enough, however. It may be desirable to set up under the German Minister of Disarmament specialized judicial and administrative facilities for the enforcement of disarmament with standards for the recruitment of personnel higher than those applied in the other branches of the German Government. If this were done appointments to offices having disarmament functions might be submitted to the Permanent Disarmament Commission for approval. A second measure would be to require that the Permanent Disarmament Commission be given notice of all proceedings before German disarmament officials, and have the right to participate in their preliminary investigations and access to their files and records as well as the right to appear in the proceedings themselves. A third measure would be to require that all judgments and administrative determinations, whether on the criminal or civil side in disarmament matters, be submitted to the Permanent Disarmament Commission for review. If in the judgment of the Disarmament Commission there had been a failure to comply with the letter and spirit of its rules and regulations, it could require the German Government to consider the question again and, if an official dereliction of duty were found, to punish the offending official as well.

Ultimately, however, the question of an appropriate international sanction adapted to the nature of the offense must be faced. As was stated earlier it will be difficult to set in motion conventional machinery of international sanctions where the object to be achieved is the repression of isolated offenses against disarmament. At the bottom of this difficulty is the present international irresponsibility of individual violators of international obligations.

The decision to try individuals for fomenting aggressive war offers an apt precedent which may point the way out of our present difficulties. What is needed is the establishment of an international tribunal to try offenses against the law of nations by individuals. A good place to begin would be German disarmament. The mere existence of such a tribunal might be expected to act as a deterrent both to violators and to any official tendency to condone their offenses.

The Permanent Disarmament Commission should, therefore, have the right to require the rendition of any individual, private or official, charged with a violation of its rules and regulations for trial before such international tribunal. It is unnecessary at this time to spell out the circumstances under which the Permanent Disarmament Commission might find it necessary to make use of such a weapon but a typical situation would be one in which the Commission determined that German enforcement showed such laxness and inefficiency as to require that the punishment of offenders be transferred to other hands.

I. The Scope of the Controls

The scope of the controls remains to be considered. Of the five parts of the disarmament program three should be executed directly by the Permanent Disarmament Commission. These are the Military, Industrial, and Scientific Disarmament Programs. The control of foreign trade and of external assets should be channeled through the German Government which would take its broad directives from the Commission and report back on its execution of the program.

In the period immediately following the end of occupation the unfinished business of the occupation period should be completed rapidly by the Permanent Disarmament Commission. It would probably be helpful to retain in Germany, in addition to the permanent staff of the disarmament body, a small body of technical military police to be employed in carrying out these remaining tasks.

J. A System for Preventing the Production of Military Items and Key Industrial Products

The military disarmament program will take a fairly simple administrative form of absolute prohibitions, since under it the rebuilding of facilities for and the production of arms, munitions, implements of war, and aircraft will be forbidden.

Closely related to the military disarmament controls and, like them, possessing the advantage of being relatively simple to administer are the controls over the key industries which under the industrial disarmament program are to be eliminated completely and permanently. These industries are sources of products more closely related to war than to peacetime needs or constitute autarchic forms of production, resumption of which would be a signal of underlying intention to build a new war potential. These key industrial controls would involve a prohibition of production of certain bottleneck items strategically related to the production of forbidden military items. These prohibited industrial items would include the light metals, antifriction bearings, abrasives, electronics, technical and scientific optical instruments, heavy trucks, and ocean-going shipping. To these would be added the autarchic items of synthetic oil and rubber.

The controls would be less burdensome to operate if they could be limited to the foregoing items to be prohibited. Such a limitation would also have the advantage of keeping the Allied authorities more or less out of a resentful public eye and mind and would reduce the occasions of conflict and competition with a German government. Other factors make for the possibility that the quantitative production and export limitations on other items might be diminished some-

time after the postoccupation stage begins. The inevitable conversion of the German economy to a light-industry consumer basis, the cutting of existing ties with the areas formerly dominated by Germany, the eventual freeing of Europe from German industrial domination may make some expansion of German capacity and production in the controlled (as distinct from the eliminated) civilian industries less threatening to world security.

A postoccupation reduction in the range of industrial controls, however, involves great security risks. Hence, it is necessary in setting up postoccupation industrial controls to distinguish between the areas of greatest danger and those for which key industrial controls would afford adequate guaranties of security.

K. Separation of the Ruhr-Rhineland Under International Administration

The Ruhr-Rhineland is the principal danger zone in Germany. Since the separation of that area from Germany is within the range of political possibility FEA has considered the disarmament aspects of such a step. An FEA committee has found that permanent separation could contribute substantially to the achievement of disarmament objectives if the area were subjected to the initial disarmament program along with the rest of Germany and thereafter placed permanently under a regime of international administration in order to prevent a redevelopment of war potential. The advantages which would accrue to the achievement of disarmament objectives are (1) an easier maintenance of the economic and military superiority of the rest of Europe over Germany; and (2) avoidance of an economic sterilization of the area which could instead be made to serve the interests of the European economy as a whole rather than a warlike German state.

From the point of view of postoccupation disarmament control, an advantage of permanent establishment of Allied authority in the Ruhr-Rhineland would be to make it more feasible from a security standpoint to rely primarily on a system of key industrial controls in the rest of Germany. Any attempt to restore German domination would be handicapped from the outset by the international control of the Ruhr-Rhineland and could be more easily derailed by throwing a few strategic economic switches in Germany itself.

In view of the importance of separation as a measure of disarmament control, the views of the FEA Committee on Separation of Territory are set forth in more detail in the following section of the present report.

Any reduction of the industrial disarmament program to the system of key controls in rump Germany must be gradual. To draw up alternative paper schemes at this time to fit various assumptions concerning the date when military occupation will end and concerning the amount of unfinished initial disarmament business left to be done would be an academic exercise without basis in real knowledge. The assumption here made is that the end of full-scale Allied government will come long before the continuing controls are firmly established. Nothing is clearer than Allied unwillingness to be troubled with the job of governing Germany longer than necessary.

Reduction of controls to a basic minimum should be fitted to the progress of the initial phase of removals, eliminations, and reductions in

capacity. It can only be planned on the spot by those who have disarmament in charge. Nothing could be politically more unsound than to make the Germans hard and fast written promises that one or the other restriction will be lifted at set dates. Only the pattern of reduction can be planned in advance; the time and circumstances in which it is to be effected must be left to the judgment of the Allied control authorities.

L. Scientific Research Control

The control of scientific research must obviously be the least concrete of the disarmament programs, precisely because it involves a venture into the unknown. Prohibition of research can hardly amount to more than a paper mandate. While research facilities physically connected with industrial installation can be checked and an accounting demanded of all research conducted therein as well as in known scientific laboratories, it is still true that it will not be possible to anticipate new discoveries or to control the process of discovery itself. One atomic bomb in the wrong hands could work havoc with an entire disarmament program. The effort must be made to establish an order of priority among militarily useful products of scientific research and to endeavor to control the means of discovering those of the most revolutionary character. In addition, an obvious point of control would be the production and importation of rare earths and other subtances which have been shown to be more or less easily treated to yield atomic energy. Uranium and related substances would come under that head. It seems unlikely that it will be possible to keep the knowledge of the methods of treating such substances from the Germans or any nation for very long. Our best reliance must be on a constantly rejuvenated corps of able and alert scientific police.

M. Foreign Trade and External Security Controls

Certain programs, such as the prevention of stock-piling of critical materials, the control of the creation of German external bases, whether in the form of movements of persons or capital or the establishment of business arrangements, will require continued attention and implementation in the long-term future.

These long-term controls may require the continuation of a German External Security Council (of the type referred to in sec. V) whereby the Permanent Disarmament Commission (representing the Big Four) could obtain the assistance and cooperation of the other United Nations and, perhaps, some of the neutrals. Directives on the subject to the German government could be transmitted through the Permanent Disarmament Commission. Supporting or complementary arrangements providing uniform security standards of treatment by the governments of the various countries could be provided by the German External Security Council or some equivalent body of the UNO.

For example, continued Allied control over German foreign trade will be essential to the effectiveness of the disarmament program. A detailed examination of the nature of such control has been made in TIDC Report No. 27 on the Control of German Foreign Trade. As appears from that report the control of German foreign trade will

require a combination of local and international methods. The Permanent Disarmament Commission can check all imports at German ports of entry, administer a system of licenses for specified imports and exercise surveillance over German foreign trade records. These controls must be supplemented, however, by agreement among the United Nations to exercise surveillance over the exports of their nationals to Germany in order to guard against contraband trade. Control will also have to be exercised over German foreign trade policy with the object specifically of assuring that it is placed on an unconditional most-favored-nation basis, that quantitative controls are abandoned, that export subsidies shall be temporary and limited to approved purposes, and that the handling of foreign exchange conforms to the standards of the International Monetary Fund. Such a system of controls will give fair assurance that foreign trade cannot be employed by the German government as an instrument for the preparation of war.

Similar controls over loans, movements of technical or scientific personnel, the reestablishment of German industrial activities abroad, and cartel-like business arrangements could be continued, to the extent deemed necessary for security by the participating powers.

SECTION X. SEPARATION FROM GERMANY OF THE RUHR-RHINELAND AS A POSTOCCUPATION CONTROL

CONTENTS

		Page
A.	Area designated for possible separation	327
B.	Effect of territorial separation upon German war potential	327
C.	Problems involved in territorial separation	328
D.	Treatment of detached area	328
E.	Specific purpose for administration of detached area	329

Section X

SEPARATION FROM GERMANY OF THE RUHR-RHINELAND AS A POSTOCCUPATION CONTROL

A. Area Designated for Possible Separation

The area considered for possible separation from Germany is the region at the western border of Germany, herein designated as the Ruhr-Rhineland. The Rhineland is defined as the entire left bank of the Rhine that was included in the German boundaries of 1937, comprising the Pfalz, the part of Hesse west of the Rhine, and the Saar. The Ruhr takes in the region on the right bank of the Rhine known as the Greater Ruhr, which has been defined as including the Kreise of Rhine Province lying east of the Rhine and all of Westphalia except the northernmost portion and two Kreise at the northeast. These exact delimitations are proposed for statistical purposes only. No decisions have been reached in regard to the extent of the territory that might be separated.

B. Effect of Territorial Separation Upon German War Potential

This area has provided the principal economic foundation for the German war potential. It contains a large percentage of the reserves of Germany's major industrial resource, coal, upon which are based her iron and steel, chemical, and other industries. It also contains a large proportion of the plant capacity of many of the basic industries essential to the development of the war potential of a modern industrial nation. It is, in addition, the most important communications area of Western Europe, linking north and south and east and west by means of a complicated system of railroads, highways, and inland waterways. Because of this concentration of economic resources, its separation might afford the most important single opportunity permanently to reduce the war-making power of Germany.

Although detachment of this territory would in itself greatly diminish the German war potential, separation alone could not be relied upon to achieve the disarmament of Germany. It would be an acceptable disarmament measure only as part of a total program designed to reduce, both in the rest of Germany and in the area itself, the broad economic base upon which Germany's military establishment has been built. Following upon the partial deindustrialization of Germany prescribed for the period of occupation, and accompanied by adequate safeguards to prevent German repenetration, separation of this area would become a powerful measure for postoccupation control of a disarmed Germany. Inclusion of this measure in the total program would mean that the period of full-scale occupation could be shortened, that the postoccupation controls over truncated Germany could be reduced and simplified, and that, even

if Germany were able to evade such controls, her ability to wage war would be considerably lessened. Furthermore, it would be possible to utilize the valuable resources of the detached area for the benefit of Europe as a whole.

C. Problems Involved in Territorial Separation

Unquestionably, the separation of this area would raise problems of a serious nature. It would incur the resentment of the German people and might intensify their resistance to the disarmament program as a whole. Separation of this area would create a German irredentum and, because of strong nationalistic sentiment among the Germans, retention of the existing population might give rise to continual irredentist agitation. On the other hand, removal of the population to truncated Germany might make impossible the establishment of a stable economy there and would raise perplexing questions in regard to repopulation of the detached area with sufficient labor to permit utilization of the resources of the area. The adjustment of the conflicting economic interests of the area and of adjacent non-German countries might also prove difficult. The treatment of the detached area as roughly outlined below is proposed as offering the best possibility for solution of these problems.

D. Treatment of Detached Area

It is proposed that the Ruhr-Rhineland be designated as a strategic area and placed under international administration as a trust of the Security Council of the United Nations. Internationalization will be more acceptable to the people of Germany and the United Nations than annexation by an individual nation or nations. For this reason and because the individual rights and economic opportunities of the population would be assured protection by an international administration, retention of the German population of the area is more feasible than under annexation, and retention of the population offers the best promise for the establishment of a sound economy within truncated Germany and the utilization of the resources of the detached area. Internationalization would thus further the dual purpose of reducing the German war potential while providing an administration under which the productive facilities and communications of the territory could be used to the greatest advantage in strengthening the European economy as a whole.

International administration would be ineffective, however, if the major economic resources and organizations of this area remained in the control of the present German corporations, syndicates, and cartels. It is, therefore, proposed that the major industrial properties be taken over and administered by an international public corporation chartered by, and responsible to, the administrative authority of the United Nations.

Other safeguards would also have to be taken. The detachment from Germany must be permanent with the United Nations Security Council guaranteeing the boundaries of the separated area. All Germans who have held responsible positions in the Nazi system of control and those who became residents later than 1934 should be removed from the area. All other German inhabitants would be

given the choice of remaining in the territory or being moved back to Germany. Those that chose to remain would be required to take an oath of allegiance to the administrative authority of the United Nations. Every form of organization in the area, such as trade unions and educational, political, cultural, religious and scientific institutions, should at the outset be severed from connection with parent or associate organizations within rump Germany. Trade with Germany would be regulated to prevent German acquisition of materials proscribed by the over-all disarmament program as contributing toward the redevelopment of the German war potential and to prevent German economic and political repenetration. Inclusion of the area in any customs union or trade agreements established by the countries to the west would safeguard the prosperity of the area and facilitate its integration into the economy of the region.

FEA has been primarily concerned with the economic significance of separation of territory as a measure of disarmament. The disarmament aspect, however, is so closely related to the social and political implications of territorial separation that they cannot be ignored.

The placing of such an important territory under international control would permit the United Nations to take positive action and not confine its functions to the negative role of reducing the German industrial economy.

The Ruhr-Rhineland, removed from Prussian domination, has indigenous traditions which are favorable to the development of a "good European" type of social and cultural attitude. Wisely administered, this territory could serve as a center of influence for the reshaping of German society. The economic and political institutions which have proved dangerous to the peace should be replaced by others adapted to the area but based upon principles acceptable to the United Nations. A civil service less rigidly hierarchical and authoritarian than the Prussian could be built up, and local self-government could be encouraged.

The international public corporation set up to exploit the resources of the area might play a constructive role in the coalescence of the interests of the European nations. If internationalization is successful, it could also do much to shift the emphasis of the European political system away from a competition of national units for power in the direction of a system of order sustained by joint responsibility.

E. Specific Program for Administration of Detached Area

The broad general policies recommended for the treatment of the separated territory are as follows:

1. Interim control of this area should follow the specific lines established for the interim program of occupation of Germany. Removal or destruction of industrial plant in line with the policy established for the reduction of industrial capacity and the satisfaction of reparation claims should be carried out in the Ruhr-Rhineland as in other parts of the Reich. Separation should then be undertaken as a postoccupation measure of control.

2. Because of the great contribution that this territory can, and has, made toward the development of a German war potential,

it is recommended that it be designated a "strategic area," and permanently separated from Germany under the international trusteeship system as provided in the United Nations Charter and in accordance with the purpose expressed there: "To further international peace and security."

3. The territory should be placed under the administering authority of the United Nations, and all the functions relating to the area, including the guaranty of its boundaries, should be exercised by the Security Council, which may avail itself of the assistance of the Trusteeship Council, as provided by the Charter.

4. The basic document establishing the trusteeship should provide for administration of the territory by an international governing commission of 10 or 11 members appointed by the Security Council and comprising representatives of the great powers, the adjacent interested non-German states, and one from the territory itself. Administration of the territory should follow, in general, the procedures and principles set forth in the complete program.

5. It is assumed that all Nazi war criminals will have been taken into custody by the occupying authorities. All others having held responsible positions in the Nazi system of control and Germans who have become residents since 1934 should be removed from the area.

6. Other German nationals who have been residents of the territory for at least 5 years prior to 1939 should be given the choice of remaining in the territory, being transferred to Germany, or being moved to other areas willing to receive them. Any German national choosing to remain in the area should be required to take an oath of allegiance to the administering authority of the United Nations, thus becoming a citizen of the trust area.

7. Provision should be made by law for disposition of those Germans who later do not demonstrate a willingness to support and adhere to the laws of the new regime.

8. Every form of organization in the area, such as trade unions and educational, political, cultural, religious, and scientific institutions, should be severed from connection with parent or associate organizations within rump Germany.

9. In the interests of disarmament it would be advisable to destroy or remove all plants of a strategic character located at the German boundaries or forming part of complexes extending into Germany.

10. If the reparation demands upon coal and other production are not satisfied at the end of the occupation period, a special body should be designated to adjust these claims with the governing commission of the territory. This body should also decide whether any surplus in favor of Germany proper from the proceeds of the sale of shares and stocks and physical properties belonging to citizens of the trust area is to be applied as reparation.

11. The basic document establishing the trusteeship should provide that title to all property in the territory belonging to the German or the Prussian or Bavarian States, or to municipalities of the territory, including subsoil deposits, mines and their subsidiaries, transportation systems and equipment, electric, gas,

and water works and lines, buildings, etc., shall pass to the United Nations.

12. Remaining strategically significant productive resources and facilities privately owned by German nationals, residing within or outside the territory, should be confiscated in the name of the United Nations. These would include all privately owned mines and their subsidiaries, transportation systems and equipment, all electric, gas and water works and equipment, all heavy industry, etc.

13. The personal property of German war criminals and other Nazis removed from the territory for security reasons should be confiscated by the governing commission. Other Germans who cannot establish prior residence or who choose to leave the territory should be permitted to take with them all movable personal belongings and the cash realized from the sale of other personal and real property.

14. The coal mines and other major industries should be placed under the control of an international public corporation chartered by the governing commission of the territory with approval of the Security Council, and subject to the basic laws of its charter, to specific laws pertaining to its regulation, and to the general laws of the territory.

15. German managers of all productive facilities placed under the public corporation should be removed and new non-German managing personnel appointed.

16. The facilities should be operated by the public corporation in the interest of the United Nations, particularly those adjacent nations which will be most affected by its operations, but with regard for the economic welfare of the territory itself and for security considerations.

17. The territory should be included in any customs union established by adjacent countries to the west and in any regional or international trade agreements.

18. Trade with Germany should be carried on in the same manner as trade with other countries, subject only to the terms of the peace treaty.

19. The general trade policy should be directed toward the end of assuring the fullest use of the resources of the area for the European economy as a whole.

The complete program proposed for the treatment of this area is presented in appendix J.

PART III. ECONOMIC ASPECTS OF THE PROGRAM

SECTION XI. RELATIONSHIP OF DISARMAMENT TO THE GERMAN ECONOMY

CONTENTS

	Page
A. Security the primary concern in the treatment of the German economy	335
B. The FEA disarmament program versus other economic considerations	336
1. Reparation and needs and costs of the occupation forces	336
2. The German standard of living	337
C. The distinction between the impact on the German economy of disarmament and other postwar factors	339
D. Possibilities of peaceful employment of the German economy	341
1. Extensive plant and economic opportunities available	341
2. Better living standards and employment opportunities feasible through development of agriculture and peaceful industries	342
3. German foreign-trade potential after disarmament	349
4. The FEA program leaves economic potentialities for Germany to reemploy in "peaceful" lines those forced out of war-potential industries	364
Conclusion—Long-term economic effect of disarmament on Germany	367
Table 1. Estimated domestic production and imports of foodstuffs of the truncated Reich around 1950	353
Table 2. Estimates of imports in 1936 prices	353
Appendix sheet to tables 1 and 2	354
Table 3. Estimated attainable German postwar imports compared with maximum and 1936 imports	357
Table 4. Estimated attainable German postwar exports compared with maximum and 1936 exports	361
Table 5. Available labor force in industry and handwork, by industrial group, 1925–39	364
Table 6. Anticipated postwar employment in certain industries directly affected by the FEA disarmament program	365

Section XI

RELATIONSHIP OF DISARMAMENT TO THE GERMAN ECONOMY

A. Security the Primary Concern in the Treatment of the German Economy

It has been established as a fundamental principle governing the treatment of Germany that disarmament must be carried through as the primary Allied program and must override all other considerations.

This principle was proposed in the preliminary United States program for German economic and industrial disarmament originally advanced on April 15, 1945. (See appendix D, sec. I.) It was approved in the military government directive which stated that "the principal Allied objective is to prevent Germany from ever again becoming a threat to the peace of the world." The Berlin Protocol reaffirms that the primary purpose of the Allies in occupying Germany is "to assure that Germany will never again threaten her neighbors and the peace of the world." Accordingly the position of this report and the underlying premise of the FEA disarmament program is, that, in case of conflict with other economic considerations such as occupation costs, reparation, or the German standard of living, disarmament must have priority.

Uncritical concern about possible consequences after the last war led to the failure properly to disarm Germany. The result was a Second World War, the effects of which upon Germany and the world at large were far more devastating than would have been occasioned by a proper disarmament of Germany following 1918. It is now clear that the costs of eliminating German war potential must be measured, not primarily in terms of costs to Germany, but in terms of the cost to mankind of a third world war.

While security is to be the primary objective in the treatment of Germany, it need not rule out attention to other economic considerations. This was recognized in the FEA proposed preliminary United States program, of April 15, which stated:

> Whenever consistent with the primary objective (German economic and industrial disarmament) the measures undertaken to achieve it shall take into account:
>
> (*a*) the provision of facilities for and contribution to the maintenance of the occupying authorities;
>
> (*b*) the provision of equipment, goods, and services to Allied Nations for restitution and reparation;
>
> (*c*) the leaving of an opportunity for the German people to achieve a minimum standard of living;
>
> (*d*) the pursuit of the foregoing objectives in such a manner as to contribute substantially to the establishment of a healthy economic life in both Europe and the world.
>
> In case of any conflict in objectives the elimination or control of Germany's war-making power shall take precedence over all other considerations. (See appendix D, sec. I.)

In the development of the FEA disarmament program, every effort has been made to adhere to these stated principles. The steps proposed for the disarmament of Germany do not go beyond those necessary to prevent future aggression, since it is acknowledged that plans put forth in the name of disarmament which cannot honestly be justified as necessary for that purpose will ultimately fail.

The execution of the FEA program for economic and industrial disarmament will leave resources and economic opportunities which, with proper exploitation, would enable the Germans eventually to reestablish a minimum civilian economy; which would permit Germany to carry on trade with the rest of the world in order to gain the imports it requires; and which, in encouraging the development of agriculture and peaceful industries, would carry the potentiality of eventually increasing the living standard and scale of employment substantially above the original minimum.

B. The FEA Disarmament Program Versus Other Economic Considerations

Before examining the question of the economic impact of a disarmament of Germany it is important to point out that the other programs announced in the Berlin Protocol also will affect the German economy. Unless the relationship of those other programs to disarmament is carefully thought through the result may be to render insuperably difficult the accomplishment of disarmament objectives. The Berlin Protocol gives primacy to disarmament over the other programs, the scope of which must therefore be such that it will not interfere with the achievement of a successful disarmament program. It is the position of FEA that if these programs are properly coordinated, all the objectives of the Berlin Protocol can be satisfactorily achieved and Germany still left with the means of developing a peaceful adequate economy.

1. REPARATION AND NEEDS AND COSTS OF THE OCCUPATION FORCES

The effect of any proposal to pay reparation out of current production of German plant and equipment which ought to be removed for disarmament reasons would be to stultify the disarmament objectives which, according to the Berlin Protocol, are to have priority. All of the separate practical considerations against paying reparation out of current production from plants and factories that should be disestablished for purposes of disarmament are set forth in full detail in section VII, B, 3. To maintain such excess or dangerous plant and equipment in Germany would mean that it would exist as war potential after the cessation of reparation payments. This was the experience after the last war when the Germans used the payment of reparation as a tool for the redevelopment of their war industry.

A similar case can be made against compromising the disarmament program in order to defray the cost of occupation or supply the occupying forces. A conflict between disarmament requirements and occupation costs and needs might arise in several ways. If the objective of supplying the needs of the occupying forces should be so broadly construed that plants producing military equipment and such items as synthetic oil and rubber are retained in Germany, the objective of supplying the occupying forces would be in sharp conflict

with that of disarmament. A conflict would also arise if the language of paragraph 15 (b) of the Berlin Protocol were construed to mean that plants proscribed for disarmament reasons might be retained for the purpose of producing goods to supply foreign exchange to meet the costs of the occupying forces.

It would be an ironic and foolish paradox to occupy Germany for the purpose of disarming her and then to violate the disarmament program in order to supply the occupying forces or defray their costs. We should forego a claim to a full repayment of occupation costs just as we should forego reparation from current production if such claims involve retaining proscribed plant within Germany in order to increase Germany's means of payment. It should be remembered, moreover, that within a few years or more, the withdrawal of the bulk of the occupation forces will render such retained plant excess. The difficulty of removing it at that time, however, will be infinitely greater than it is now.

To give priority to disarmament objectives does not, however, mean that we must forego all claims to the payment of occupation costs and reparation in goods from current production. Both are appropriate charges against Germany and should be paid insofar as possible. Capacity of industries with little war use, but which are in excess of Germany's peacetime needs, can and should be drawn upon for this purpose. Possible examples of excess capacity may well be found in such industries as textiles and food processing.

Excess plant and equipment of this nature will be needed by the liberated countries to start again industries which were ruthlessly destroyed by the invading German armies. Nevertheless, plants and equipment to be removed for these purposes should be carefully checked to assure that those taken are actually in excess of peacetime requirements. Removals must not be indiscriminate lest they create a void in Germany which might lead to chaotic conditions, making the orderly achievement of the disarmament program impossible. Excessive removals of peaceful plant and equipment may lead to demands that dangerous industries be maintained in order to compensate for the loss and to provide necessary employment and goods for needed foreign exchange. The nations of the world would be wise to deny themselves some of the immediate benefit of the payment of reparation and occupation costs in order to attain complete German disarmament and permit the establishment of a German economy there which will provide at least the minimum needs of the population. Should either of these objectives fail of fulfillment, Germany will remain a focus of danger to the whole world.

2. THE GERMAN STANDARD OF LIVING

The FEA industrial disarmament program is explicitly designed to leave the German people an opportunity to achieve a minimum standard of living, even during the period of occupation and reparation, once the initial chaotic conditions are corrected. It contemplates the development of agriculture and peaceful industries and leaves industrial resources adequate to permit that development. Over a period of years the Germans will be able to improve their standard of living, provided they do it in a manner which will not endanger the peace of the world. The directions into which they will

be permitted to canalize their efforts at economic development are such as to benefit the great body of the consuming German public rather than to provide instruments of power for a war-mad leader or oligarchic group.

The sights for a standard of living for Germany must not be set so high, however, as to make it necessary to retain inside Germany plant and equipment which should be removed for disarmament reasons. This rule should be followed whether the products of the plant are to be used in Germany or exported to raise foreign exchange to cover the cost of imports.

It has been the aim of FEA to develop a program which would avoid this danger but would make possible reestablishment of a self-supporting economy in Germany and would merit the support of a world public opinion that is genuinely committed to the prevention of German aggression.

A further aim has been to devise a security program which has potentialities for permanence and stability. Security from German aggression will be as vital in 1970 as in 1948. There must be both adequate initial action to disarm Germany and a follow-through program which will control and prevent German rearmament or the redevelopment of a dangerous war potential in the future. It must never be forgotten that action taken during the occupation, however drastic and effective for the time being, may be reversed in time by the Germans after the occupation. The dangers of such reversal will be particularly acute if the new pattern for the German economy is an abnormal and unduly repressive one.

In the light of these considerations FEA has recommended the complete and permanent elimination from Germany of only a few key industries and the scaling down to legitimate peacetime levels, rather than the elimination, of the so-called heavy industries. Those industries and parts of industries that are essential to peaceful living in Germany and constitute no potential threat to the security of the world are to be permitted to remain.

In attempting to achieve disarmament that meets this test of economic feasibility, there is no real or implied recognition of any obligation on the part of the Allies to maintain any given standard of living for the German people. It is not conceded that a given standard of living, such as one comparable to that expected for Europe generally in 1948, should be the starting or control point for determining removals of industrial plant and equipment in the war-industries category. It is argued that if the execution of the disarmament program should make it impossible for Germany to keep her standard of living in step with the European economy over the next 3 or 4 years, or to match a specific standard of living which it is anticipated these countries will reach, disarmament should still be the first consideration. The only obligation is the common-sense one of maintaining an economy which will permit the Germans at least a subsistence level of living.

The statement in paragraph 15 (B) of the Berlin Protocol to the effect that German living standards shall not exceed the average of standards of European countries is a ceiling—not a floor or a guaranty. It does not establish an Allied obligation to assure the German people a standard of living as high as the average for Europe. That is a problem for the Germans to work out within the limitations of the

Berlin Protocol. A reading of the document as a whole supports this view.

None of the references in the Berlin Protocol to a German peace economy or standard of living limits the scope or range of the industrial disarmament referred to therein. Paragraph 19, which reads: "Payment of reparations should leave enough resources to enable the German people to subsist without external assistance" relates only to reparation and has no bearing on disarmament, which has priority over the other considerations in the Protocol. Paragraph 11 is a mandate to restrict production in Germany's heavy industries to Germany's approved peacetime needs and to remove the excess. The Protocol does not forbid a reduction or complete elimination of any given segment of industry if required by disarmament considerations.

The strict standard-of-living yardstick is, however, applicable in measuring the wisdom of requiring reparation in the form of nonwar plant or current production although it has no application to removals or restrictions for disarmament purposes. To fail to make this distinction is to place the lesser interest of a single country desiring reparation in nonwar plant above the universal interest in security from future German aggression.

As a consequence of war damage, economic disruption, and a general state of chaos, it is likely to be impossible in the interim period for the Germans to achieve even a subsistence standard of living. If German people are starving and without adequate clothing and shelter, there is certain to be an outcry against reparation, against any claims levied to pay occupation costs, and especially against long-term disarmament measures. Under such circumstances it may well be argued that the Germans should be permitted to produce any goods they are capable of producing in order to obtain the foreign exchange by which to supply their own needs.

Should such an eventuality arise, it is the firm position of the FEA that, while the German people should not be left to suffer severe and unalleviated hardships, they can be assisted without detriment to the disarmament program. Indeed, their immediate needs are for food, clothing, and shelter upon the provision of which the FEA disarmament program will have little bearing. Nor would less disarmament provide Germany with export goods that it could market in time to meet its immediate needs. Rather than supply the raw materials and permit the operation of industrial plant proscribed in the interests of long-term disarmament, the FEA recommends that the Allies provide, through interim financing, the supplies needed to tide the Germans over until the time when they can maintain their own economy through activities which will present no potential menace to the peace of the world. For example, in order to protect the fundamental security objectives of the Allies, shipments of food and clothing to Germany this winter would be justified.

C. The Distinction Between the Impact on the German Economy of Disarmament and Other Postwar Factors

The probable impact of the proposed disarmament program on the German standard of living and level of economic activity is very difficult to measure. Any differences between postwar and prewar living standards in Germany doubtless will be seized on as an indication of the price being paid for disarmament. In fact, however, a

decline in living standards in Germany will be no measure of the cost of disarmament. It will be the net consequence of a number of factors. These factors include the damage and disorganization due to war, the need of the occupying forces for local supplies such as housing, etc., the payment of reparation and, perhaps most important, the inevitable costs of reconversion from war to peace. Another factor which will adversely affect the economic potential of the German people is the detachment of the area east of the Oder Neisse River from Germany for administration by the Polish Provisional Government. By this arrangement Germany lost its major food-surplus area and a substantial proportion of its peacetime industry.

Collectively, these factors will have far more effect upon living standards than the disarmament program. But it may be impossible to distinguish the effects of disarmament from the effects of these other factors.

Disarmament at this particular time will place no especially heavy burden upon Germany. The reconstruction of her industry to a new pattern will be no more costly than to restore operations according to the old pattern. Labor and materials are now unemployed. The restoration of permissible industry and the removal of dangerous plant would make use of both and would serve as a public-works program in starting the economy going.

Furthermore, most of the removals of plant and equipment required by disarmament will not adversely affect a future peacefully inclined German economy. Plants producing actual war materials are not necessary to a peacetime economy. In addition, much of the industrial plant serving both war and peacetime needs has been expanded far beyond peaceful civilian requirements. Such excess plant would be idle in any peaceful country. Therefore, Germany loses nothing by its removal or destruction. In a few cases disarmament may require the elimination of plant which could be actively utilized in a peaceful civilian economy. These instances will not be many but even where they occur the elimination must be carried out in the greater interest of the future peace of the world, which is the primary consideration.

By and large, disarmament will even be beneficial to Germany. With the elimination of socially wasteful effort in arms production and in the artificial stimulation of other war-potential industries and with agriculture and remaining industry directed energetically into normal peacetime activities, the population may well be on the way to a higher standard of living than it enjoyed during the years of preparing for and waging war.

The greatest problem the German economy will face in the postwar period is foreign trade. Admittedly Germany must import some of the food required by its people and some of the raw materials needed by its peacetime industries. For these imports Germany will have to manufacture goods for export, since imports cannot exceed exports for any significant period of time unless Germany is again to be financed from abroad. Criticism of the disarmament program as restricting exports, even though these exports are the products of industries with a vital war potential, may be expected on the ground that they prevent Germany from acquiring certain imports that may be required to maintain an adequate standard of living.

But sharp readjustments in the pattern of German foreign trade are inevitable regardless of the restrictions of the disarmament program

on the exports of metals, machinery, machine tools, chemicals, optical instruments, etc. German foreign trade in such items has been expanded for many years beyond proportions consonant with a free competitive market or the over-all national interests of those who purchased these items from Germany. Exports of these goods were excessively stimulated after World War I to produce a balance of trade which would allow Germany to make monetary reparation. Artificial levels of exports in these categories were maintained after the end of reparation up to World War II by German cartel devices, export subsidies, bilateral trading devices, the abuse of the German clearing system, and other means of German economic domination which will not now be tolerated. Therefore, German exports in these categories are due for a sharp readjustment downward regardless of restrictions implicit in the FEA disarmament program. This program only regularizes a trend toward the development of German exports in the "peaceful" industries that would be the case under any desirable international commercial policy.

D. Possibilities of Peaceful Development of the German Economy

In outlining possibilities of growth in the unrestricted areas of economic endeavor in Germany, the FEA plan does not attempt to develop a program for full employment in Germany. It simply indicates some of the available avenues for the application of German resourcefulness and industry of a more "peaceful" nature. It is believed that in this direction, indicated in the Berlin Protocol, lies the road to an increasing employment and standard of living in Germany without danger again to the peace of the world.

The FEA disarmament program does not attempt to determine what standard of living should be left to the German people after full reparation, pursuant to the Potsdam formula. Rather, it attempts only to show the standard that can be attained after the execution of the disarmament program but before reparation in nonwar plant or out of current production. Similarly, in presenting figures on potential exports under the disarmament program and on the imports for which such exports would pay, it is not intended to suggest that these should be the figures for exports and imports. The data simply demonstrate what export-import program would be possible after disarmament and are introduced to show that the FEA disarmament program is a feasible one in the sense that Germany can become economically self-supporting at a better than minimum level.

1. Extensive Plant and Economic Opportunities Available

The FEA disarmament program, while designed to reduce substantially the capacity of Germany's war industries, does not add up to a complete deindustrialization of Germany. It is aimed at a redirection of German industry to peaceful channels.

Under the program, a number of industries, of substantial importance to a peaceful economy and appropriate for expansion, are to be left untouched and, indeed, encouraged to expand. Examples of these are the textile-processing industries, the food-processing industries, the glass industry, and the building materials industry. There are no express limitations against the exploitation of agriculture, lands, forests,

mineral deposits, and other natural resources, including coal. Indeed, the program calls for an expansion of production and economic activities in these areas.

Removal of excess plant capacity and production limitations are characteristic of the program with regard to the so-called heavy industries, including iron and steel, machine tools, machinery, chemicals, power, and transportation equipment. Unlike the Morgenthau plan, which would completely suppress these heavy industries, the FEA disarmament program would permit the retention of facilities and production at the level necessary to meet Germany's peacetime requirements.

In only a relatively few industries, the so-called key industries, would German plant and production be completely eliminated. These are the industries producing aircraft, ocean-going vessels, electronics, antifriction bearings, abrasives, raw aluminum and magnesium, and synthetic oil and rubber. Production in these key industries would be greatly reduced anyway from war levels to the much lesser scale required for home consumption or trade in a non-war economy. Therefore, the real impact of these eliminations will be limited and the resources left for German use and development quite extensive.

2. BETTER LIVING STANDARDS AND EMPLOYMENT OPPORTUNITIES POSSIBLE THROUGH DEVELOPMENT OF AGRICULTURE AND PEACEFUL INDUSTRIES

The FEA program has been designed to insure that enough heavy industries remain to Germany, not only to support existing "peaceful" industries, but also to permit the expansion of these peaceful industries. So far as disarmament considerations are concerned, the uncontrolled industries may expand to the limit of their domestic and export possibilities. The only restrictions upon any such expansion would be the indirect ones of the over-all availability of raw materials and machinery.

For example, the FEA machine tool program provides for the retention of machine tool producing capacity sufficient for the permitted production of 25,000 metric tons per annum. This capacity, together with the 500,000 tons of existing stock of installed machine tools, should enable Germany not only to maintain her existing peaceful industries, but also take care of any new requirements for machine tools in those fields.

Likewise, the program contemplates the production of approximately 1,200,000 tons of machinery under the steel restrictions to be imposed. This estimate provides for new machinery in the peaceful industries at a rate equivalent to the average rate of machinery construction in those fields in 1928 and 1933. The former year was one of peak activity in the machinery industries because of the heavy demands made by the large-scale rationalization and development programs that were undertaken throughout German industries under the boom conditions induced by foreign loans. On the other hand, 1933 was a year of low activity in the machine industry, although there was some recovery from the even lower rate of 1932. The average of production in these 2 years should permit sufficient production in these branches of the machine industries to fill the requirements of the reoriented economy. (See appendix I.)

Reparation claims may drain off some of the production above minimum needs for a brief period—probably 6 to 10 years. At the end of that period, however, all the capacity of German agriculture and peaceful industry redeveloped during the postwar era could work for the benefit of the German population. It is, therefore, to the interest of the German people not to hold back during the interim, but to develop their peaceful industries to the maximum.

The FEA program contemplates that eventually—probably at the end of reparation or in 10 years, whichever is longer—limitations on capacity and production in the so-called heavy industries will be reconsidered. It does not attempt to predict in advance whether or not it will be feasible or desirable at that time to relax these limitations. A great many factors will have to be taken into account. They include considerations as to whether or not the heavy industries have been effectively transplanted in other countries of Europe and are free from German domination; whether or not Germany's will to war has abated; whether or not a German political and economic trend toward peace has been achieved, making it feasible to reduce the controls on the restricted industries (as distinct from those eliminated) to mere surveillance.

It is not necessary here to repeat the observations made in section II, chapter B, concerning the unbalance in Germany's industrial pattern in the so-called "capital goods" or "heavy" industries which has been characteristic of her economy for several decades. The facts recited there make a case for the control of Germany's heavy industries as a benefit to the people of the world and, at the same time, to the German consuming public. Too much of the fruit of German industry and labor over the past 30 years has gone into the development of plant which was designed to produce weapons of war rather than a better standard of living for the consuming public of Germany. By reducing to peaceful dimensions and holding back development of the heavy industries, and, simultaneously, directly and indirectly encouraging the development of the "peaceful" or consumer industries, the FEA disarmament program provides both a challenge and an opportunity to the German people to "work their way back" into a better standard of living for themselves and a more peacefully inclined economy for Europe.

When the new Germany has recovered from the effects of war and when its new potentialities have come to the fore, the opportunities will seem more real than they do now in the wake of battle. The following discussion of a few of the fields presenting opportunity to increase the standard of living and level of employment in nonwar work will serve to demonstrate the feasibility of the proposition that Germany can improve her economic position on the basis of the policy laid down in the Berlin Protocol.

In preparing this analysis, FEA has assumed that the land east of the Oder-Neisse line, which in the Berlin Protocol was turned over to Poland to administer, will ultimately become a part of Poland and its German population be transferred to truncated Germany. This reduced area, the new Germany, will have to support its increased population out of its own production. The analysis indicates that its resources will be sufficient to support its concentrated population by production for domestic consumption and for exports to pay for imports of food and other materials lacking in the reduced area.

Agriculture.—The number of agricultural workers in truncated Germany can be increased considerably over what it was just before the start of the war. In 1939 the estimated number of farm workers in the area of the new Germany was 7,012,000 as compared with 7,611,000 in 1925. In large part the reason for this decrease was an expanding opportunity in the cities for high paying jobs, many of them in industries stimulated by the government to prepare for war. Now that the war is over the farm will become more attractive, and in Germany, as in the United States and many other countries, many thousands can be expected to return to the lower pay on the farm.

In the new Germany there are also some large estates, although most of these are to be found in the area east of the Oder-Neisse line. The large estates in the new Reich should be broken up and additional opportunities for farm work provided thereby. It is estimated that this will increase farm employment above the 1933 level in the truncated area by 150,000 additional year-round workers.

In preparation for self-sufficiency during the war Germany distorted its agricultural economy through high tariffs and subsidies, the costs of which were paid by urban consumers in higher prices and decreased job opportunities. Agricultural production which was stimulated was mainly that using little labor, such as grain production. In the new Germany the more profitable intensive activities which use much more labor, such as dairying, meat production and vegetable raising, should be stimulated. Germany should also follow the pattern of other densely populated European countries and import from abroad the feed it needs to produce more of its own proteins, fats, and oils. That conversion will take time, but it would provide better opportunities for employment and would result in the production of more food of greater nutritional value.

However, it is proper to point out that even after these changes the truncated area is not likely to be able to employ as many workers in agriculture as the larger Altreich unless it operates on the highly uneconomical basis of subsistence farming of small plots. In 1939 the number of farm workers in the Altreich was 8,800,000, of which 1,788,000 were employed in the area east of the Oder-Neisse line. Farms in the new Germany can hardly be expected to absorb all agricultural workers displaced from this area, as well as those from the Sudetenland, old Poland, the Baltic countries, and the Balkans. Many of these displaced farm people undoubtedly will be added to the labor force of the cities. Industrial expansion along peaceful lines will therefore be essential for future development of the new Germany.

The complications arising from the loss of the areas east of the Oder-Neisse line should not be underestimated. This territory, comprising 23 percent of the Altreich, contained only 14 percent of the population of old Germany; yet it produced over 25 percent of the food of the nation and was the major food surplus area. What its loss means becomes apparent when one considers that about 17 or 18 percent of the total German food supply was imported.

However, as will be shown later in this discussion, it will not be necessary to weaken the disarmament program in order to compensate for this loss of resources and to provide the people of the new Germany with the food they need.

Construction and allied industries.—Ironically, the war has provided Germany with an opportunity to expand extensively one of her peaceful industries—that of construction. For 15 to 20 years a very large number of workers will be engaged in rebuilding the destroyed and damaged homes of Germany, the permitted industrial, commercial, and public establishments, public services, and the urban facilities, the bridges and transportation system.

As of April 1944, the accumulated housing shortage in the Reich caused by wartime destruction amounted to approximately 5,700,000 dwelling units. Another 4,800,000 units, estimated to have suffered minor damage through aerial warfare, were in need of immediate repair. Further bombing and land warfare have rendered many more dwellings uninhabitable since April 1944. In addition, Germany had a very high percentage of old and substandard dwellings before the war. Those of this group which were not injured by the war will also require replacement or repair. In approving the displacement of millions of families from east of the Oder-Neisse, old Poland, Czechoslovakia, Hungary, the Balkans, and the Baltics, the Berlin Protocol added to the housing problems of Germany. The numbers so displaced and in need of homes will probably exceed 12,000,000 persons.

The housing of such numbers presents at once a tremendous problem and challenge to German industry and ingenuity. There undoubtedly will be a great increase in construction and all the related industries, such as plumbing fixtures and housefurnishings. The FEA program also anticipates an expansion of industries manufacturing building materials and supplies. This will offer considerable opportunity for employment.

Woodworking industries.—During the war, the output of the timber industry was primarily used for war purposes at a sacrifice of civilian needs, thus creating a shortage of all types of consumer goods. For example, furniture was available only to air-raid victims and in a cheap standardized form. Manufacture of many other civilian items was completely eliminated.

Although no figures on production in the woodworking industries, prewar or present, are available, it is reasonable to assume that with the creation of an accelerated building program, as a result of the acute housing shortage, the furniture industry and other manufacturers of wooden household articles would be working to capacity for the 15 to 20 years, which, it is estimated it would take properly to house the German people. This program would afford employment to thousands of skilled workers displaced by the prohibitions imposed upon other industries.

Coal.—Coal is Germany's basic mineral resource. Germany is normally the second largest coal producing and exporting country in Europe, surpassed only by Great Britain. Including its brown-coal deposits, it has far greater known coal resources than any other country on the European Continent.

Although Germany's prewar Steinkohle production will be cut approximately 13 percent and her brown-coal production about 5 percent by the loss of the Oder-Neisse area, her remaining coal resources will be ample for domestic requirements and substantial exports.

The elimination or restriction of output of specified heavy industries—particularly iron and steel, synthetic oil, and power—and the

probable decline in rail transport in the residual German economy will reduce domestic industrial consumption of coal. This reduction may be offset in part through expanded activity in such peaceful industries as the textile, cement, paper and pulp, and gas industries and by the development of new peaceful industries using coal. In general, however, the quantity of coal available for export will be considerably greater than in the prewar period.

It is recognized that, particularly in the immediate future, there will be great demand for German coal as reparation. At the end of reparation, when coal can again be shipped on a regular trade basis, a number of factors point to the likelihood of an increased market for German coal. The coal industry, therefore, appears to be one which can be counted upon to absorb an increasing proportion of labor and to contribute substantially to the development of a healthy German consumer economy.

Forestry.—The postwar demand for lumber in the building, construction, woodworking, and wood-synthesis industries of continental Europe will in all probability far exceed that of prewar years and possibly exceed the peak demand of the war period. Although, in order to preserve her natural resources, Germany imported part of her lumber requirements prior to the war, she may well become a wood-exporting country as demands are made upon her rich timber resources. The systematic exploitation of her forests to provide for domestic requirements and produce a surplus for export should open employment opportunities in forestry even greater than those of the prewar years.

The FEA program calls for an increase of 100 percent in the annual rate of cutting for a period of years sufficient to bring Germany's stock pile of standing timber down to the average generally prevailing. Such a security policy indirectly would serve to strengthen the civilian economy for the years it was followed. Germany's forest area in 1937 was about 31,321,000 acres, or 27 percent of her land area, on which were about 1,600 to 2,000 million cubic meters of growing trees. Some 20 percent of this resource will go with the loss of the Oder-Neisse area. The remaining Germany will still provide great opportunities for production and jobs in forestry and related transportation and woodworking activities.

Fisheries.—Although the per capita consumption of fish in Germany has increased markedly since 1933, it is only two-thirds that of Belgium and Denmark and even lower in comparison to that of other Scandinavian or the Baltic countries.

Only 1 percent of caloric intake in Germany comes from fish. However, its importance in the German diet is somewhat greater than this indicates, since it supplies as much as 8 percent of the total intake of animal protein.

In 1933, 19,000 persons were engaged in fisheries in Germany. Since that time the number has increased. However, there is every reason to believe that with the decreased availability of other proteins, the per capita consumption of fish will increase. If so, the opportunities for employment in fishing and in canning and handling fish will be much expanded.

Light-chemical industries.—When the war started the era of plastics had just begun. Now that the war has ended, Germany, with its versatile chemical industry, is in a position to exploit this field. Great

development of products and uses is possible in plastics made from the light chemicals not restricted by the FEA disarmament program for the chemical industries, and from a wood-pulp base. There are endless possibilities for the use of plastics. A single chemical plastic may make products ranging from engine coolants to machine parts, water and spot repellants, grease- and water-proofing for all kinds of textiles, furniture, hospital and kitchen utensils, paper and leather improvers, and substitutes of many kinds.

Experimentation during the war has developed chemicals in applications which can be turned to peaceful use. Exploitation in Germany of those segments of the chemical industry not proscribed by the FEA program can be made to provide employment, as well as goods and services for internal use and numerous products for export.

Textiles and textile fibers.—Germany can be expected to make large strides in this field after the war. Before the war the German textile industry was very extensive and important, ranking after agriculture, metals, and engineering as the largest employer of labor. However, except for rayon and staple fiber, Germany imported the bulk of the raw fiber and yarns—mostly wool and cotton—used in her textile industries. Under the 4-year plan, and during the war, the output of fiber derived from wood cellulose increased greatly. The production of synthetic fiber went up from 221,000 tons in 1938 to 470,000 tons in 1943. Not only did this provide more rayon cloth but it was found that staple fiber up to 35 percent could be mixed with wool and cotton without affecting the wearing quality of the resulting wool or cotton clothing.

The new Germany will have the capacity to produce almost as much in the textile field as did the Altreich and will be able to offer employment to many workers if sufficient raw materials can be obtained. Some of the output of textiles and textile fibers can be exported, but the competition will probably be severe. Considerable contributions to reparation could be made from this industry if other countries would accept the goods. However, what is not withdrawn in reparation or export will be available to the people of Germany and a substantial demand will probably exist there.

Other consumer-goods industries.—The Nazis made every effort possible prior to the war to divert the German economy into the production of munitions. They deliberately held down the manufacture of goods for the civilian consumer. However, the developing army needed great quantities of such goods, and, as a result, the indexes of production did not go down as much as the supply available to the consumer. Nevertheless, in spite of large army purchases, employment in such industries as textiles, clothing, tobacco, and beverages went down between 1929 and 1938. Other consumer industries remained stable or increased production very slightly.

Shortages in consumer goods started to develop before the war, and have been intensified by the denial and destruction of the last 5 years. German homes need heating, bathroom, kitchen, and countless other facilities. Given favorable conditions, employment in these industries can, therefore, be expected to expand until the most pressing consumer requirements are satisfied. The large savings of the war period, unless they are confiscated, lost through inflation, or consumed during a period of prolonged unemployment, as well as the income that will result from wage payments in an active construction industry,

should provide ample purchasing power to strain all German factories producing consumer goods. Germans may even be in a position to buy many conveniences which were not formerly common in the German home.

In terms of American standards, the consumer durable-goods industry in Germany had not yet come of age when hostilities started. In part this was due to concentration on the preparation for war. If purchasing capacity is available, the desire of Germans for such items as sewing and washing machines and vacuum cleaners should be extensive. It is envisaged that a considerable portion of the limited amount of steel permitted to Germany will go into such consumer durable goods. The market should readily absorb all such products as may be produced under the restrictions. Much depends, of course, on a high level of employment and on a purchasing capacity above that needed for food, shelter, fuel, and clothing.

During the war some of the German equipment in the consumer-goods manufacturing field was destroyed or damaged. Other parts of the industry were lost in the Oder-Neisse separation. But most of the plant is still available and could be put into operation by cannibalizing and by some new repair. Until the reasonable needs of the German consumer are supplied, existing facilities in the new Germany can be run on a two-shift basis rather than the customary one-shift.

Handicraft and small business.—Traditionally, a large proportion of the German labor force was engaged in artisan activities and in small business. As late as 1939 no less than 68 percent of all industrial establishments, employing 30 percent of all industrial workers, were of the handicraft type. This did not conform to the Nazi ambition to develop a strong concentrated war economy. During the years prior to the war every effort was made to force workers from self-employment and small business into heavy industries such as iron, steel, coal, machinery, electrical equipment, and chemicals. This process was rapidly accelerated during the war as manpower shortages became very acute. Decrees were issued proclaiming all Germans, male and female, actual or potential compulsory workers in the heavy industries. Any change of working place was prohibited under severe penalties.

These small industries and trades hold great potentialities for a reemployment of workers laid off from war industries. It may be expected that hundreds of thousands of workers will find their way back into these customary German activities.

Other potentialities.—Undoubtedly, other industries and occupations have employment and production potentialities greater than in 1936 or 1938. Other industries than those mentioned above have increased their capacity for producing peacetime products under the stimulus of the war. Some activities have been deliberately squeezed down—e. g., domestic service—to provide workers for the production of munitions. Unfortunately, few data are available regarding developments in Germany from 1939 on. The full nature and size of the German potential for peacetime employment and production cannot therefore even be estimated. It undoubtedly, however, will be very large.

In large measure the peacetime potential of Germany is dependent upon the ingenuity with which the Germans themselves exploit the capacity of the industries and technologies not prohibited to them.

Means must be developed by the German credit system to provide financial credits for those who are properly prepared to expand Germany's capacity to produce consumer goods. Free entry into business and industry must be assured to all. New and small establishments must be encouraged and given assistance to grow. Such a course means that restrictive economic practices must be eliminated. This will be difficult since German industry and trade have traditionally been organized in cartels and combines. The degree of concentration varied according to the industry, but under the Nazis concentration increased everywhere. In the interest of employment and the full development of resources this tendency must be reversed and small business given full opportunity.

3. GERMAN FOREIGN TRADE POTENTIAL AFTER DISARMAMENT

The material which follows is not designed to prescribe the exports and imports necessary for the German standard of living prescribed under the Berlin Protocol.

It should be clearly understood that in presenting the following estimates of German foreign-trade potential after disarmament FEA is concerned only to show the impact on German trade of the disarmament program. It does not hold out the estimates as a schedule to be maintained as a matter of Allied policy nor as representing what German foreign trade ought to be. For example, it may well be that the food imports estimated as available, when added to the anticipated food production in 1950, would provide a standard of diet in excess of that available to the average of the other European countries and, hence, in violation of the Berlin Protocol. Finally, the estimates are not intended to suggest that the margin above a basic minimum cannot be reduced (*a*) by plant removal of nonwar plant or (*b*) through reparation payments from current output.

The FEA estimates that, despite the execution of its proposed disarmament program, German exports and imports could be brought into balance by 1950 at about 3.2 billion reichsmarks, a level which would permit the maintenance of a better than minimum German standard of living. Exports of this value would represent a sharp decrease from the 1936 exports of 4.77 billion reichsmarks. This reduction, however, will be attributable only in part to the curtailment of Germany's industrial activity as provided by the FEA disarmament program. Several other factors should also be considered.

Germany will be able to get only essential imports mainly because of reduced production and internal rehabilitation needs due to war and not to disarmament. Indeed, even without these limitations, increased industrialization abroad and increased ill will toward Germany make her prewar trade unlikely of recapture. Moreover, if Germany could have more than her essential imports, some of the exports should probably be drawn off as reparation for a time.

Because of Germany's present financial position, the German balance of payments will have to be determined almost entirely by the movement of goods. In addition to having clearing claims of over 20 billion reichsmarks outstanding against it, Germany will lose not only its stocks of gold and foreign exchange but all of its foreign investments to satisfy reparation or other claims. Also, it is unlikely that Germany will be able to obtain substantial loans abroad over a

long period or that it will be paid in cash for services such as maritime or other transportation. It follows, therefore, that the value of total postwar imports cannot exceed that of total exports except for a brief period of reconstruction. An analysis of Germany's former trade and the effects disarmament measures will have upon it shows that, to achieve a balance between imports and exports, Germany will be able to import only those commodities that are essential to the Germany economy.

In the following tables an attempt is made to demonstrate that, taking the FEA disarmament program into account, imports can be brought into balance, and Germany by 1950 can achieve a standard of living above a minimum, if the Allies wish to allow it. The purpose of the tables is to evaluate in general the imports and exports which will be attainable in 1950, and, except for exports directly prohibited by the FEA program in section II, it is not the intention to prescribe the extent of exports or imports of individual commodity categories. Nor is the level of about 3.2 billion reichsmarks, at which imports and exports are brought into balance, meant to represent either a floor or a ceiling. It is an estimate of availabilities under the disarmament program. On the other hand, if exports in the peaceful industries can be increased above the estimates, corresponding imports may be attained or any corresponding surplus above the standard of living contemplated by the Berlin Protocol drawn off as reparation out of current production.

For the sake of comparison the tables include data on the highest German interwar imports and exports as well as for those attained in 1936. The latter year is included because with the exception of certain agricultural items (notably hogs, lentils, tropical fruit, and coffee), and certain strategic materials (such as crude rubber, copper ore, and iron ore) imports in that year may be regarded as having reached close to a minimum peacetime level in quantity.

The tables indicate that certain imports, especially of food, can be increased substantially over 1936. An increase from 1,500,000,000 reichsmarks in 1936 to 1,923,000,000 reichsmarks designated for food imports is provided for in these estimates. This provision is made because the loss of the Oder-Neisse agricultural lands under the administrative cession to Poland and the transfer of approximately 10,000,000 Germans from this area to the truncated Reich may require an increase in 1936 food imports despite efforts to increase domestic food production. On the basis of the 1932–37 average the area east of the Oder-Neisse with only 14.3 percent of the population of the Old Reich and 20.3 percent of the agricultural labor force produced 17.1 percent of the wheat, 31.4 percent of the rye, 24.1 percent of the barley, 29.8 percent of the potatoes, and 24.7 percent of the sugar beets. In 1939, it had 20.7 percent of the cattle, 22.7 percent of the pigs, and 19.6 percent of the sheep.

Were the standard of food consumption in Germany to be maintained at its prewar level, the combination of these two factors, i. e., the loss of territory and the transfer of population, would necessitate postwar food imports of 2,500,000,000 reichsmarks. However, since German food consumption is to be deliberately controlled in line with the decision at Potsdam that the German standard of living shall not exceed the "average for the rest of Europe," food imports of no more than 1,923,000,000 reichsmarks are likely to be required. This figure,

as later discussions will reveal, will provide a level of 2,800 calories per person. This may be higher than the level eventually reached or estimated as a European average, but it is used as an outside figure.

Because of provisions in the FEA disarmament program the German import schedule will have to provide for increases over the 1936 figures for items such as, for example, nitrogen (for fertilizer), abrasives, antifriction bearings, rubber and liquid fuels, and heavy trucks. Under the FEA plan the production of these items is to be either eliminated in the new Germany or cut below domestic needs in order to force dependence on imports which can be shut off if necessary in the interest of world peace. A number of other imports, such as iron ore and ferro-alloys, copper, lead, bauxite, and chemicals, will be reduced substantially because of the restrictions on the internal production of heavy industries.

Although exports too will come down sharply in postwar Germany, from 4,770,000,000 reichsmarks in 1936, it is believed that ample opportunities to export products exist to raise the foreign exchange necessary to acquire 3,200,000,000 reichsmarks of imports. Exports of several items may be increased substantially. The most important change in the export column is that coal replaces machinery as the major export of Germany. Coal can almost double in volume. Not only will less coal be needed in a Germany with less heavy industry, but it is anticipated that coal resources can be more fully exploited in order to sell abroad for needed exchange.

Coal and coke production, consumption and attainable exports

At the rate of wartime coal production and a minimum level of coal consumption 94,000,000 metric tons of coal (in Steinkohle units) is the theoretical maximum coal export of postwar Germany. In terms of prewar availability of coal markets, however, 60,000,000 tons seem a more reasonable estimate of postwar coal exports, as compared with a net export of about 27,000,000 tons prewar. The 34,000,000 difference between maximum possible exports and proposed exports will allow for a decline from the wartime peak of coal output, depletion of the mines and/or some increase in coal consumption from the minimum level estimated.

Postwar markets for German coal exports

The assumptions underlying the estimated increase of postwar exports of coal are:

(1) German factories moved to Allied territory will become new export markets for German coal, while German domestic consumption will be correspondingly reduced (as estimated);

(2) Coal-deficient European countries, which formerly imported machinery, metals, and chemicals from Germany, will expand their own production in these industries and, accordingly, increase coal consumption and coal imports (e. g., France, Sweden);

(3) Increased industrial activity in the United States and the United Kingdom will increase the domestic coal requirements of those countries and decrease, accordingly, their exportable surplus of coal;

(4) Development of industrial areas in western Europe, Africa, and South America will increase prewar coal markets in these areas;

(5) Expanded production of synthetic textiles and plastics and the possible development of new industries will tend to increase world coal consumption.

Other exports that can be increased include potash, stone and clay products, glass and glassware, leather and leather goods, and toys. The production limitations on German heavy industries prescribed by the program will, however, eliminate or sharply cut other exports from their 1936 level. For example, exports of machine tools, semi-finished steel, optical glass, certain basic chemicals, motor vehicles, and other items will be eliminated; iron and steel wares, machinery, and certain chemicals substantially reduced.

Total exports considered attainable by Germany in 1950 represent 67.2 percent of the value of exports in 1936. These exports should produce the necessary exchange to provide for the imports considered essential to the German postwar economy, which represent 75.9 percent of the value of imports in 1936. Actually, estimated postwar imports other than foodstuffs represent only 47.1 percent of the value of corresponding imports in 1936, while postwar food imports are 28 percent greater than in 1936.

Agricultural imports and production and the German diet

As agricultural products represent 60 percent of the value of the postwar imports, it is obvious that this is the most important import item. The question arises: Will the German nation after losing over 25 percent of its agricultural production in the area east of the Oder-Neisse line be able to subsist at the same time that its heavy industries, which previously supplied most of its exports, are sharply curtailed?

The agricultural deficiency can be supplied from domestic production and 1,923,000,000 reichsmarks of imports of food, feed, beverages, and tobacco. It is estimated that, as a result of a shift from feed to food uses, indigenous supplies available for human consumption will, by 1950, be about 10-percent larger than the 1933–37 average. The total output of food calories of the truncated Reich is estimated at roughly 50 trillion calories as compared with 45 trillion available before the war. Therefore, a per capita consumption goal of about 2,800 calories per day would require imports of food totaling about 21.5 trillion calories (for a population of 70 million). Compared with the prewar per capita consumption, the described production and import goals would allow reduced but still reasonably adequate quantities of animal products. With less livestock and a consequent further reduction in output of animal products, domestic production of direct food calories would be larger.

The estimates of domestic production of major foodstuffs and assumptions underlying the estimates of production and imports are shown in tables 1 and 2.

TABLE 1.—*Germany: Estimated domestic production and imports of foodstuffs of the truncated Reich around 1950*[1]

[Thousands of metric tons]

	Domestic supplies available for human consumption	Imports[2]	Total supplies
Bread grains:			
In terms of grain	6,700	3,800	10,500
In terms of flour[3]	(5,025)	(2,850)	(7,875)
Potatoes	14,000	.....	14,000
Sugar (refined)	1,250	.....	1,250
All edible fats and oils	[4]620	850	1,470
Fresh whole milk for food	7,000	.....	7,000
All meat, wholesale level[5]	1,700	750	2,450
Fish	500	200	700
Eggs	227	200	427

[1] See below for assumptions underlying these estimates.
[2] See table 2 for estimates of imports in 1936 prices.
[3] At a flour-extraction rate of 75 percent. It is not likely that the very high extraction rate which prevailed during the war (over 90 percent) and which will no doubt continue during the initial emergency period will be feasible in a peacetime economy.
[4] Vegetable-oil production 100,000 metric tons, slaughter fats 170,000 tons, butter 350,000 tons. Reduced vegetable-oil production as compared with wartime has been assumed since climatic conditions in Germany do not favor production of oilseeds. Butter output can be expected to drop from the wartime high, when only invalids, expecting and nursing mothers received any whole milk; still it is expected that a larger share of milk will be used for butter production than before the war.
[5] Retail level 10 percent less.

TABLE 2—*Estimates of imports in 1936 prices*

[In million reichsmarks of 1936 value]

	Net imports of old Reich in 1936	Tentative estimates of postwar imports of truncated Reich (around 1950)
Bread grains, including rice and flour	19	373
Feed grain	14	[1]165
Other feed	27	[1]45
Potatoes	[2]8	[2]0
Sugar	—1	[3]0
Edible fats and oils, including those produced from imported raw material	346	[4]436
Meat, including meat from live animals	178	193
Eggs	78	98
Fish	49	44
Total above	718	1,351
Other	697	572
Coffee, tea, cocoa	165	.....
Spices	8	.....
Fruit, including citrus fruit	241	.....
Tobacco and tobacco products	128	.....
Seeds	14	.....
Casings	36	.....
Vegetables	40	.....
Wine	8	.....
Dairy products other than butter	31	.....
Legumes, edible	18	.....
Miscellaneous	8	.....
Grand total	1,412	1,923

[1] About ⅔ of the total meat deficit and ½ of the egg deficit to be covered by meat and eggs produced from imported feed.
[2] Rough approximation only.
[3] Consisting largely of early potatoes as evident from the price, 119 reichsmarks per ton.
[4] No imports provided for since it is assumed that a larger share of the domestic crop will be used for food.
[5] No imports provided for since it is assumed that feeding of sugar beets will be reduced as compared with prewar and that there will also be a reduction of about 20 percent in the per capita consumption of sugar.
[6] About 194 for oilseeds, 92 for plant and edible oil, and 150 for slaughter fats.

Before the war, the German food budget was better, both in quantity and in quality, than the average budget of the people of Europe, excluding the United Kingdom and the Union of Soviet Socialist Republics. It included more meats, sugar, fats, and oils, as well as having a somewhat higher caloric content. If the German diet is brought down to the prewar European level, the 1,923,000,000 reichsmarks available for food imports will allow the truncated Reich to support 70,000,000 people. The postwar diet per person would compare with that of 1936 as follows:

	Postwar	1936
Calories	2,800	2,950
Bread grain, kilograms	150	168
Potatoes, do	200	[1] 177
Meats, do	35	47
Fats and oils, do	22½	26
Sugar, do	18	22

[1] 1933–37 average.

Fats and oils would still be higher than in the rest of Europe, but this was deemed necessary because more fats are needed in the preparation and consumption of foods using potatoes, which prevail in the German diet, than of bread which has a larger place in the diets of the other countries.

The following shows how the postwar imports of food will differ from those of 1936:

[In millions of reichsmarks]

	Postwar	1936 [1]
Bread grains, including rice and flour	373	19
Feed grains	165	14
Other feeds (fishmeal, bran, etc.)	46	27
Potatoes	0	8
Sugar (net export for 1936)	0	−1
Edible fats and oils (including those produced from imported raw materials)	436	346
Eggs	95	75
Meat, including live animals	193	178
Fish	44	49
Other (including coffee, tea, and cocoa, fruit, tobacco, casings, vegetables, dairy products other than butter, legumes, edible spices, and miscellaneous)	572	697
Total	1,923	1,412

[1] Net imports. Food exports in 1936 amounted to 87 million reichsmarks.

The loss of the Oder-Neisse area has important effects on Germany's animal-products and bread-grains position. The animal-products deficiency, if required to be made up from abroad, would necessitate imports of about 750,000 tons of meat and 200,000 tons of eggs. This would make difficult an economical use of Germany's future reduced foreign exchange resources. To meet that situation and keeping in mind also the problem of absorbing surplus labor it is estimated that two-thirds and one-half, respectively, of these deficits could be made up by importing feed rather than animal products. This accounts for the large estimated increase of feed imports from 41 to 210 million reichsmarks.

Even so, there must be a reduction of consumption of meats, fats, and oils since the caloric returns from feeding potatoes and grain to

livestock is much smaller than when used directly for human consumption, while in addition the raising of fodder for livestock requires the use of more land than does production for human consumption.

The loss of the Oder-Neisse area coincides with a reduced intake of animal products and sugar to account for the estimated increase of bread-grain imports from 19 to 373 million reichsmarks.

It will take both Germany and the rest of Europe considerable time to get back to the agricultural production which characterized the period before the war. However, the analysis above indicates that when all have recovered, Germany will be able to equal the food standards of the average of the other countries in Europe in spite of the loss of the Oder-Neisse territory, and in spite of the effects of executing the FEA disarmament recommendations reflected in the decrease of her former heavy industries which supplied so much of her export.

Other goods and services in addition to food enter, of course, into the standard of living of the average German. The FEA disarmament measures do not place insurmountable barriers upon a full production of goods and the development of services for the civilian consumer. On the contrary, the FEA disarmament program takes full cognizance of the fact that Germany must be allowed exports to pay for imports essential to her civilian economy, because no other foreign exchange will be available to her. The exports shown in the following table will provide the exchange needed to procure the essentials which Germany is prohibited from manufacturing or which she cannot develop from her own resources, and will supply other countries with essential goods such as coal.

Assumptions Underlying the Tentative Estimates of Net Imports of Food and Feed for Postwar Germany

(Truncated Reich, i. e., area west of the Oder-Neisse)

1. Population of 70,000,000 with no adjustment made for annual increase, which before the war amounted to 300,000 to 400,000 persons per year.
2. Full restoration of yields to 1933–37 levels.
3. Acreage of chief crops not greatly different from those before the war, but larger acreages of vegetables, oilseeds, and legumes, chiefly at the expense of pastures and meadows.
4. Crop utilization reflecting the shift from feed to food uses—much smaller feeding of potatoes to livestock, also less sugarbeets used as feed.
5. Prewar flour extraction rate of about 75 percent.
6. Domestic food production estimated at about 10 percent above prewar as a result of a shift from feed to food uses.
7. No change in technological processes, i. e., significant increase in the production of synthetic foods, particularly fats and feed.
8. Requirements of a long-term peacetime economy, providing an average per capita caloric intake of 2,800 calories per day (wholesale level) approximately equaling what the rest of continental Europe ex-Russia consumed before the war.
9. Change in diet—a smaller intake of animal products and an increase in consumption of products of vegetable origin.

10. Prices of agricultural commodities at 1936 levels. It should be noted that at least in some cases, notably grain, prices that year were very low.[1] Since grain comprises a considerable share of total imports, any increase in price would increase the estimated deficit in terms of reichsmarks markedly.

On the basis of the above assumptions, an import deficit of somewhat less than 2 billion reichsmarks has been arrived at, the chief deficit being grain (bread and feed grains), fats, and oils. This estimate compares with 1.4 billion spent by the old Reich in 1936. In view of the loss of the agricultural surpluses of the area east of the Oder-Neisse, the import deficit of the truncated Reich at prewar levels of crop utilization and consumption would have amounted to about 2.5 billion reichsmarks. Thus, by reducing the per capita consumption in terms of calories by about 5 percent, but chiefly by substituting for animal products those of vegetable origin, a considerable saving is achieved.

[1] Compared with the corresponding period after World War I.

TABLE 3.—*Estimated attainable German postwar imports compared with maximum and 1936 imports*

[In millions of reichsmarks]

Commodity	Postwar (current values)	Imports [1] comparable to postwar		Total net change, 1936 to postwar (1936 values)		Explanation
		Maximum prewar (1939 values)	1936 (1936 values)			
A. Commodities subject to FEA disarmament measures:						
Iron ore and ferro-alloys (not including manufactures).	93.8	(1938) 411.2	242.6	Iron ore and ferro-alloys.	−148.8	After allowance for domestic supplies import requirements for steel output limited to 5,000,000 metric tons: 1,562,500 metric tons of high-grade iron ore; 7,594 tons of metallic nickel; 6,325 tons of ferro-chrome (70 percent); 2,969 tons of molybdenum; 6,325 tons of tungsten (80 percent); 912.5 tons of vanadium (50 percent). Since domestic output of 5,000,000 tons is also to approximate steel consumption, no import of semimanufactures or manufactures is allowed.
				Products for further processing, iron and steel wares	−60.8	
Copper (ore and metal)	25.0	(1938) 214.5	97.3	Copper ore and metal	−72.3	Copper, lead, tin imports based on consumption ratio of nonferrous metals to steel output limited to 5,000,000 tons. Import requirements: Copper, 45,750 metric tons (domestic output, 33,000); lead, 30,000 metric tons (domestic output, 60,000); tin, 6,250 metric tons.
				Copper manufactures	−6.5	
Lead (ore and metal)	14.0	(1938) 30.8 [2]	28.9	Lead ore and metal	−14.9	
Tin (metal)	27.5	(1929) 43.6	22.0	Tin metal	+5.5	
Aluminum (bauxite and metal)	14.0	(1940) 69.1 [2]	26.2	Aluminum	−12.2	Aluminum production prohibited. Postwar import represents minimum requirement 18,000 tons aluminum, no bauxite. All other metals to be supplied from home production, to be included in the item "other imports," or to be eliminated.
				All other ores, nonprecious. Metals and manufactures (including lead, tin, and aluminum manufactures)	−69.0	
Chemicals	87.8	(1928) 171.0 [2]	[4] 111.6		−23.8	Omitted from postwar and 1937 totals are items considered separately (nitrogen and phosphate fertilizer, resin, copal, shellac, tanning extracts. Omitted from postwar imports are prohibited or restricted chemicals and/or their chemical raw materials (coal-tar intermediates, abrasive raw materials, sulfur, sulfuric acid). Also omitted are varnish, lacquers, prepared medicines, as nonessential imports, which may be produced at home from domestic and imported raw materials.

[1] Maximum import represents highest figure of the years 1927–29, 1936–40, unless otherwise indicated. Adjustment is made for price changes.
[2] Maximum of 1936–40 period only.
[3] Estimated according to 1928–37 quantity relationship. No other year's imports available in source used for identification of specific items.
[4] 1937 import.

TABLE 3.—*Estimated attainable German postwar imports compared with maximum and 1936 imports*—Continued

[In millions of reichsmarks]

Commodity	Postwar (current values)	Imports [1] comparable to postwar		Total net change, 1936 to postwar (1936 values)		Explanation
		Maximum prewar (1939 values)	1936 (1936 values)			
A. Commodities subject to FEA disarmament measures—Con.						
Rubber (crude)	30.0	(1937) 92.8	66.2	Crude rubber Rubber manufactures	−36.2 −3.8	Synthetic production eliminated. Minimum consumption requirements of 30,000 metric tons crude rubber to be imported.
Petroleum (crude and refined)	61.2	(1939) 269.1	193.8		−132.6	Synthetic production eliminated. Minimum import requirement, 1,750,000 metric tons, with allowance for 750,000 metric tons domestic output of crude oil.
Iron pyrites	0	(1937) 24.5	16.0		−16.0	With restriction of sulfuric acid production, domestic supply of pyrites (and substitute raw materials) is adequate.
Machinery (not including motor vehicles and ball bearings).	0	(1928) 235.8	60.4		−60.4	5,000,000-ton steel output to cover total domestic requirement of machinery (inter alia) as well as small export.
Wood and manufactures (including pulpwood).	0	(1928) 484.6	224.7		−224.7	Wood and pulpwood imports prohibited (except for pulpwood for special papers, cf. "Other imports"). Wood and manufactures have also been eliminated from postwar exports; paper exports substantially reduced.
Pulp, paper, cardboard, paper manufactures, and printing.	0	(1940) 93.7	36.5		−36.5	Pulp and paper products imports prohibited (except for pulp for special papers, cf. "Other imports"). Paper and manufactures exports have been substantially reduced.
Raw phosphates	26.9	(1936) 26.3	24.2		+ 2.7	Minimum requirement of phosphate fertilizer, 560,000 metric tons (P_2O_5) after allowance for loss of agricultural territory. With restriction of steel output to 26.6 percent of 1936 level, supply of basic slag (used as phosphate fertilizer) will be correspondingly reduced. At current values postwar import of raw phosphate exceeds 1936 import.
Nitrogen	101.6	(1939) 14.6 [2]	10.7		+ 90.9	Production limited to 250,000 metric tons nitrogen. Minimum industrial need 25,000 metric tons, fertilizer requirement, 550,000 metric tons. Deficit to be imported 325,000 metric tons nitrogen (to be furnished as nitrogen fertilizer, 325,000 metric tons content). 1936 import represents value of nitrogen fertilizer import only.
Abrasives	10.6	Not available			+10.6	Production of grinding wheels prohibited. Import requirements of finished grinding wheels and other abrasive products computed in relation to steel output of 5,000,000 tons: 2,500 metric tons of finished grinding wheels and 1,500 tons of raw materials for other abrasives.

Antifriction bearings	36.0	....do			+36.0	Production of ball bearings prohibited. Minimum requirement to be imported is estimated at 2,000,000 units per month.
Motor vehicles (2,500 pounds and over).	60.0	(1928) 47.4	8.9		+51.1	Production of motor vehicles weighing 2,500 pounds and over is prohibited. Minimum requirement for import 12,000 heavy trucks and busses. 1936 import represents total motor vehicles and airplanes.
Total A commodities	588.4		1,170.0		−721.7	Decrease on comparable items 581.6, on total A items, 721.7.
B. All other commodities:						
Textiles	455.0	(1927) 1,404.8	776.8	Textile materials, yarn, piece goods.	−321.8	Postwar import of raw materials only replaces 1936 imports of raw materials (589.9), yarns and piece goods (186.9), and clothing (9.5). 1936 raw cotton, other vegetable fiber import reduced by ⅓, rayon and silk import eliminated to allow for increased production of synthetic fiber since 1936. Reduction in raw materials imported (by retention of 1936 value and by adjustment for synthetic fiber production) elimination of manufactures imports, retention of 1936 value of textile manufactures exports will presumably effect a decline in per capita consumption.
				Clothing and hats	−9.5	
Hides, skins, and leather	166.3	(1927) 263.7	184.2	Hides, leather, and tanning materials.	−17.9	Decrease of 17.9 represents elimination of tanning bark and extracts (to be produced at home from natural and synthetic materials). Retention of 1936 value of hides and leather imports, elimination of manufactures import, retention of manufactures exports will result in decrease in consumption standard. Fur pelts and manufactures eliminated as nonessential. (Compare also elimination of exports, disappearance of Leipzig industry.)
				Leather shoes and other leather manufactures.	−4.5	
				Raw and prepared pelts, fur manufactures.	−61.9	
Resin, copal, shellac	15.6	(1928) 22.3	20.8		−5.2	Postwar import reduced 25 percent from 1936 (in addition to reduction brought about by price changes) to reflect decrease in consumption standards.
Technical fats and oils (oilseeds for technical purposes).	32.2	(1936) 30.0 [2]	32.2		0	Some reduction in quantity results from maintenance of 1936 value. Other technical oils included in chemicals import.
Coal, brown coal, and coke	0	(1929) 136.5	84.5		−84.5	To be postwar export items. Domestic production adequate for total needs plus exports, with no imports required.
Stone, clay, and glass products	0	(1929) 88.5	43.2		−43.2	
Fine mechanical goods	0	(1929) 82.1	12.6		−12.6	
Precious metals and manufactures.	0	(1928) 8.5	1.8		−1.8	Nonessential import. Exports also eliminated.
Food (for human and animal consumption).	1,923.4	(1928) 2,843.4	1,499.4		+424.0	Minimum import requirement to provide diet of 2,800 calories, in view of loss of agricultural territory. To provide 2,800 calorie level for 70 million people composition of prewar imports must be substantially altered. The cheaper vegetable proteins and unprocessed foods to be substituted in part for animal foodstuffs, luxuries, and prepared foods.

[2] Maximum of 1936–40 period only.

TABLE 3.—*Estimated attainable German postwar imports compared with maximum and 1936 imports*—Continued

[In millions of reichsmarks]

Commodity	Postwar (current values)	Imports[1] comparable to postwar		Total net change, 1936 to postwar (1936 values)	Explanation
		Maximum prewar (1939 values)	1936 (1936 values)		
B. All other commodities—Con.					
All other	21.9		176.4	−154.5	Unspecified imports reduced to reflect decrease in living standard.
Total B commodities	2,614.4		2,831.9	−293.4	Decrease in comparable items 217.5, on total B commodities 293.4.
1936 items not comparable to postwar.			216.0		Noncomparable items included in net change column.
Total imports	3,202.8		4,217.9	−1,015.1	Postwar imports represent 75.9 percent 1936; not including food postwar represents 47.1 percent.

Source: Statistisches Jahrbuch für das Deutsche Reich (various years) and (for chemicals) Monatliche Nachweise über den Auswärtigen Handel Deutschlands.

TABLE 4.—*Estimated attainable German postwar exports compared with maximum and 1936 exports*

[In millions of reichsmarks]

Commodity	Postwar (current values)	Exports comparable to postwar		Total net change, 1936 to postwar (1936 values)		Explanation
		Maximum prewar (1939 values)	1936 (1936 values)			
A. Commodities subject to FEA disarmament measures:						
Iron and steel wares	128.0	(1929) 879.4	387.9	Iron and steel wares	−259.9	160,000 metric tons cutlery, agricultural tools, iron and steel wares available for export from steel output limited to 5,000,000 tons. Pig iron, other semimanufactures not available.
				Pig iron, products for further processing.	−374.8	
Machinery (including vehicles and electrical products).	450.0	(1939) 1,518.8	1,081.3		−631.3	300,000 metric tons export available from restricted machinery and steel output. Decline from 1936 level also covers FEA prohibitions on airplanes, ball bearings, radios, electronic equipment, machine tools, precision instruments.
Light chemicals	278.1	(1928) 855.1 [1]	[2] 722.2		−444.1	Eliminated are prohibited items (explosives, nitrogen compounds, coal-tar derivatives, caustic soda, methanol); items subject to production or import limitation (sulfur, sulfuric acid, abrasive raw materials). Also eliminated are basic chemicals (decline in production level); manufactures of grease, oil, and wax (scarcity of imported fats); medicinals not prepared. (Compare elimination of prepared medicines in import estimate.) Not included are items considered separately: Resin, copal, shellac, fertilizer.
Paper manufactures and printing.	105.0	(1937) 116.2 [2]	105.0	Paper manufactures and printing.	0	Imports of pulpwood and pulp will be substantially eliminated; domestic pulp capacity limited to processing of domestic pulpwood resources. Even with loss of territory, decreased consumption will allow paper manufactures export. Reduction in quantity of manufactures export is effected by use of 1936 value. Paper manufactures include photographic paper.
				Pulp, paper, and cardboard.	−101.9	
Photographic apparatus	28.7	Not available	28.7		0	Postwar represents civilian cameras only. 1936 total includes separate lenses, to be restricted.
Rubber and manufactures	0	(1939) 56.0	42.0		−42.0	Synthetic production eliminated; imports of natural raw material restricted.

[1] Estimated on the basis of 1928–37 quantity relationship. No other years available in source utilized for identification of specific items. Represents exports of light chemicals and all other chemicals.
[2] 1937 export. Total chemicals (light and other).
[3] Maximum of the 1936–38 period only.

TABLE 4.—*Estimated attainable German postwar exports compared with maximum and 1936 exports*—Continued

[In millions of reichsmarks]

Commodity	Postwar (current values)	Exports comparable to postwar		Total net change, 1936 to postwar (1936 values)		Explanation
		Maximum prewar (1939 values)	1936 (1936 values)			
A. Commodities subject to FEA disarmament measures—Con.						
Liquid fuel and lubricants	0	(1936) 22.0	23.0		−23.0	
Nonferrous metals and manufactures.	0	(1929) 356.4	191.9		−191.9	Restriction of ore imports to permit nonferrous production only in proportion to restricted steel output; elimination of aluminum and magnesium production.
Fertilizer (except potash)	0	(1928) 69.4	51.7		−51.7	Restriction of nitrogen and steel (therefore basic slag) production will replace Germany on net import basis for nitrogenous and phosphatic fertilizer.
Lumber and wood manufactures.	0	(1929) 100.4	42.3		−42.3	Restriction on lumber imports plus loss of lumber-producing territory will not allow lumber exports.
Total A commodities	989.8		2,676.0		−2,162.9	Decrease on comparable items, 1,686.2, on total A items, 2,162.9.
B. All other commodities:						
Textile manufactures	486.9	(1929) 802.7	486.9	Textile manufactures	0	Retention of 1936 value of export (yarns, piece goods clothing, hats) provides reduction in quantity of manufactures export. Decrease in manufactures and raw materials exports to offset decline in corresponding imports, with possible decrease still required in per capita consumption.
				Textile raw materials	−22.5	
Leather and leather manufactures.	111.8	(1929) 236.5	86.0	Leather and manufactures.	+25.8	1936 exports increased 30 percent in value to maintain 1936 quantity, with possible decrease required in domestic consumption standard. Pelts and furs eliminated from exports because of nonessentiality of fur pelts as imports; disappearance of Leipzig fur industry.
				Prepared pelts and fur manufactures.	−42.3	
Foodstuffs	0	(1929) 464.8	87.6		−87.6	Loss of food-producing territory will increase food imports, will not permit exports.
Precious metals and manufactures.	0	(1929) 994.0	34.5		−34.5	Necessity to restrict imports to essential commodities will not permit production and therefore export.
Clocks and watches	32.3	(1928) 46.2	32.3		0	Value of 1936 exports maintained to allow some decrease from quantity of 1936 export, because of scarcity of raw materials.
Musical instruments	28.1	(1929) 75.9	28.1		0	
Films	25.0	Not available	25.0		0	
Stone, clay, and porcelain products.	155.7	(1929) 184.0	119.8		+35.9	1936 value of export increased 30 percent to allow maintenance of 1936 quantity of export. Domestic raw materials available and/or substitution for prewar
Glass and glassware	101.4	(1929) 126.8	78.0		+23.4	

Toys	47.4	(1929) 89.9	36.5	+10.9	materials possible (as in the case of toys).
Potash	126.2	(1929 and 1937) 97.4 [1]	[2] 84.2	+42.0	1937 value increased 50 percent to provide increase in quantity of export since crude potassium salts are an important German raw material. Because of restricted production of sulfuric acid, crude potash may replace potassium sulfate exports.
Coal and coke	1,080.0	(1937) 625.8	388.5	+691.5	Decreased domestic consumption and wartime level of production will allow export of 60,000,000 tons in Steinkohle units (maximum possible export estimated at 94,000,000 tons, if markets available). Loss of coal-producing (and consuming) territory has been taken into account.
All other	18.2		63.2	−45.0	Decrease in living standard will require reduction in imports not specified as essential commodities, therefore also in nonspecific exports.
Total B commodities	2,213.0		1,550.6	+597.4	Increase on comparable items, 662.4; on total B items, 597.4.
1936 items not comparable to postwar.			541.6		Noncomparable items are included in net change column.
Total exports	3,202.8		4,768.2	−1,565.4	Postwar exports are 67.2 percent of 1936 exports.

[1] Not entirely comparable to 1937 and postwar figure. Represents 1929 export of crude potassium salts and 1937 export of potassium sulfate, chloride, magnesium salts. 1937 and postwar figures (from Monatliche Nachweise) include crude potassium salts, potash, potassium sulfate.
[2] 1937 export.

NOTE.—Maximum export represents highest figure of the years 1927–29, 1936–40, unless otherwise indicated. Adjustment is made for price changes.

Source: Statistisches Jahrbuch für das Deutsche Reich (various years). Data on chemicals, films, photographic apparatus from Monatliche Nachweise Über den Auswärtigen Handel Deutschlands.

4. THE FEA PROGRAM LEAVES ECONOMIC POTENTIALITIES FOR GERMANY TO REEMPLOY IN "PEACEFUL" LINES THOSE FORCED OUT OF WAR POTENTIAL INDUSTRIES

It remains to consider the impact of the FEA disarmament program on employment opportunities.

In the years before the war 33 percent of the national effort was given to war preparation and not to the production of goods for the civilian population. The extent to which, even before the outbreak of the war, labor was shifted to heavy industries from the extractive and consumption goods industries is shown in table 5 which compares the distribution of the labor force of the Altreich (including the Saar) in 1939 and in 1925, a year of high industrial capacity. The prewar housing lag in Germany when compared with the shift into building and allied trades under the Nazis serves to high-light characteristically the fact that most of the production into which German labor moved took forms useful to rearmament and not to the consuming public.

The process by which during the interwar years the German economy was more and more closely fitted to the pattern of total war has now to be reversed. That reversal is imposed on the German economy by the cessation of the war and not by disarmament.

One consequence will be the creation of a considerable surplus labor force, since one-third of the labor force has been making no contribution to the German standard of living. The problem of what disposition to make of that surplus is essentially one of reconversion.

TABLE 5.—*Available labor force in industry and hand work, by industrial group, 1925–39, in Germany proper* [1]

Industrial group	Available labor force (in thousands)		Gain or loss	
	1925	1939	In thousands	Percent
Mining, salt, and turf cutting	903.0	733.6	−169.4	−18.8
Quarrying, glass, pottery, etc	696.7	654.4	−42.3	−6.1
Iron and other metals production	614.0	683.4	+68.8	+11.2
Iron and steel and other metals manufacturing	1,009.8	1,051.4	+41.6	+4.1
Machinery, boilers, apparatus, vehicles	1,323.1	1,976.3	+653.2	+49.4
Electro-technical	422.6	639.4	+216.8	+51.3
Fine mechanical and optical	152.1	192.9	+40.8	+26.8
Chemical	353.4	498.0	+144.6	+40.9
Textile	1,207.7	1,134.9	−72.8	−6.0
Clothing	1,601.0	1,334.7	−266.3	−16.6
Paper production and printing	538.7	512.6	−26.1	−4.8
Leather and linoleum	174.5	158.5	−16.0	−9.2
Rubber and asbestos	68.9	77.9	+9.0	+13.1
Timber and wood manufactures	972.4	834.4	−138.0	−14.2
Musical instruments and toys	110.0	53.7	−56.3	−51.2
Food, drink, and tobacco	1,361.0	1,462.6	+101.6	+7.5
Building and allied trades	1,727.3	2,375.2	+647.9	+37.5
Water, gas, electricity—production and distribution	181.0	213.1	+32.1	+17.7
Persons not in fixed employment	252.7	15.6	−237.1	−93.8
Total, industry and hand work	13,670.5	14,602.6	+932.1	+6.8

[1] 1935 figures for the Saar are included in the data given for 1925.

TABLE 6.—*Anticipated postwar employment in certain industries directly affected by the FEA disarmament program as compared to employment in 1936*

Industry	Number of employees in 1936	Proposed production as percent of 1936	Number of employees after disarmament	Reduction in employees resulting from disarmament
Iron and steel other than foundries	[1] 209,000	20	54,000	[2] 155,000
Foundries	[1] 157,000	[1] 30	47,000	110,000
Electric power	[3] 109,700	[3] 60	65,800	43,900
Light metals (aluminum only)	[3] 23,300	(4)	5,000	18,300
Rubber processing	[5] 52,000	[5] 34	17,700	34,300
Machinery, boilers, and apparatus and electrotechnical	[6] 860,000	[7] 37	320,000	540,000
Fine mechanical and optical instruments, exclusive of clock and watch making and handwork	[8] 70,000	[8] 26	20,000	56,000
Motor vehicles	[9] 148,000	[9] 25	37,000	111,000
Shipbuilding	[6] 76,000	[10] 14	10,700	65,300
Machine tools (including metal-cutting tools)	[6] 90,000	[11] 8	7,200	82,800
Abrasives	[11] 4,000	0	0	4,000
Antifriction bearings	[12] 20,000	0	0	20,000
Electronics	(13)	0	0	(13)
Synthetic oil	(14)	0	0	(14)
Chemical (certain branches)	[15] 88,000	50	44,000	44,000
Total	1,913,000	.....	628,400	1,284,600

[1] From TIDC report.
[2] From TIDC report. Electric capacity in 1936 was 15,000,000 kilowatts; the FEA program recommends reduction to 9,000,000 kilowatts, or 60 percent.
[3] TIDC report (p. 38)—5,000 persons required to fabricate the 30,000 tons per year permitted; TIDC report (p. 16)—production in 1936 was 97,000 tons. Therefore, since ratio is 1 person to 6 tons, it required roughly 16,000 persons for fabrication in 1936. Ingot production required 7,300 in 1936 (Die Deutsche Industrie), or a total of 23,300.
[4] 0-ingot, 31-fabricating.
[5] TIDC report. Rubber processing in 1936 amounted to 86,000 tons (TIDC report); the FEA program proposes a reduction to 29,000 tons, or 34 percent. Employment in synthetic rubber manufacture in 1936, which is to be completely eliminated under the FEA program, was negligible.
[6] From *Die Deutsche Industrie*.
[7] Weight of 1936 products estimated at 3,250,000 tons. The FEA program recommends 1.2 million metric tons, or 37 percent.
[8] Production in 1936 was 400,000,000 reichsmarks, according to *Die Deutsche Industrie* (p. 47). Of this, exports in 1936 were 90,500,000 reichsmarks and production for domestic use in 1936 309,500,000 reichsmarks. 25 percent of 1936 is estimated as probable production for domestic use after disarmament, based on steel and other production. 25 percent of 309.5 million reichsmarks equals 77.4 million reichsmarks. This amount plus 28.5 million reichsmarks estimated exports equals 105.9 reichsmarks, total production after disarmament, or 26 percent of 1936. 26 percent of 76,000 persons actually employed in 1936 in this category equals 20,000. In this industry, therefore, approximately 56,000 persons will be thrown out of jobs as a result of disarmament.
[9] TIDC report—proposed production is estimated at 25 percent of 1937 production.
[10] MEW shows average construction of river craft for foreign and domestic account for 1929, 1933, and 1937 was 14 percent of total construction. It is assumed that loss in such construction may be offset approximately by construction for coastal shipping.
[11] Production in 1936 was 312,000 tons; production permitted under the FEA program is 25,000 tons, or 8 percent of 1936.
[12] TIDC report on German machine tool industry.
[13] TIDC report (p. 13).
[14] Number of employees in 1936 unknown but probably small.
[15] This is an estimate, based on *Die Deutsche Industrie* of the branches of the chemical industry affected by the FEA program.

While at a superficial glance it might appear that disarmament with its restrictions on heavy industry would be responsible for a major reduction in employment opportunities, a closer view shows that any reduction is primarily a result of the break-down of a distorted war economy on the cessation of war. It is estimated that there will be a reduction of 1,285,000 employment opportunities in industries directly affected by the disarmament program. (See table 6.)[1] That reduction would have come about even without

[1] In table 6 the reductions in employment in the more important industries directly affected by the FEA disarmament program have been estimated on the basis of employment in those industries in 1936. The year 1936 was chosen in preference to a later year since it was marked by relative by full employment and since in 1936 the industries in question were less completely geared to war than later. To the extent that those industries were engaged in preparation for war the figures of decrease in employment exaggerate the impact of disarmament on employment in peaceful pursuits which is the ultimate baseline.

disarmament, since much of the change required by disarmament the Germans would have been obliged to undertake as reconversion. Moreover, it is important to bear in mind that in the categories affected by the FEA program excess capacity is so great that disarmament causes little if any displacement that would not be inevitable as a result of the inability to exploit such excess profitably. The point to be noted, therefore, is that the only valid comparison in estimating the effect of disarmament on employment is what Germany would have been able to do without disarmament.

No attempt has been made here to estimate how the surplus labor force could be distributed among new or expanded peaceful industries. The dimensions of the problem will be somewhat reduced by the reduction of the total labor force from 34.6 million in the 1939 Altreich to 32 million as a consequence of the loss of men during the war and a withdrawal of women, children, and older workers from the labor market. The major problem, as already indicated, is that of redistributing income so that the unemployed get an adequate share. That can be accomplished in various ways, e. g., by an adequate social-security system, by shortening hours, introducing two shifts in peaceful industries which before the war were typically on a one-shift basis, and by expanding the category of industries not likely to be affected by shortages of materials, as for example, construction. In addition, the expansion of agriculture, coal, crude oil, and forestry should provide a substantial number of new job opportunities.

Hours of work of industrial employees can be reduced from the level of 48.5 per week in 1938 and from higher war levels. A maximum exploitation of equipment in the peaceful industries will make it wise to introduce two-shift systems. The FEA program leaves a reasonable amount of machinery and machine-tool equipment so that Germany's plants can be kept up to necessary standards of efficiency even on a two-shift basis.

The construction industry and related trades should be a major source of employment opportunities since for the next 15 to 20 years Germany will have to carry forward an enormous program of rehousing its population. Many other opportunities of expansion in peaceful industrial lines and in agriculture, coal production, and forestry have been described earlier in this section.

Lost employment opportunities in industries directly affected by the disarmament program will doubtless have short-run secondary multiplier effects in lines supplying or serving those industries. It must be remembered, however, that primary expansion in peaceful industries and agriculture will on their side have secondary effects in expanding employment opportunities in other lines. Expansion opportunities in consumer-goods manufacture should be very large, especially since the distorted German concentration on capital goods after the First World War and especially following the Nazi rise to power has left a fallow field of incalculable fertility that wants only to be tilled. By lifting the incubus of war from German industry the latter will be set free from the prohibition to enter the consumer field with a consequent multiplication of employment opportunities.

If Germany uses its reduced resources wisely and energetically she can gradually expand her plant capacity and employment opportunities in agriculture and peaceful industries. Under the FEA program sufficient steel and machine-tool capacity have been permitted

for this purpose. This is on keeping with principle 13 of the Potsdam Declaration which states: "In organizing the German economy, primary emphasis shall be given to the development of agriculture and peaceful domestic industries."

Conclusion—Long-Term Economic Effect of Disarmament on Germany

The long-term effects of the FEA program would become apparent after the war damage is repaired, reparation is completed, and the German economy comes into balance again. The consumer and the taxpayer would be relieved of the cost of armament. A very large share of the national income and effort was drained off into war preparation in the 1930's. The products of German industry would go in the future only to serve the needs of its civilian population. Many subsidized, high cost, and uneconomic industries would have been eliminated. They were maintained in prewar Germany and given subsidies at the expense of the civilian population in order to keep them available for conversion to war purposes. Under the FEA program the Germans would have the necessary exports to buy the needed products, which these industries formerly produced, where they can be most economically purchased. There will thus be an evolution toward a balanced economy that will give more to the consumer. Restrictions designed to mobilize the nation for war will be gone. Industries will find their natural levels and those which best serve the interests of the consumer in the new Germany—in which competition will have an opportunity to operate more freely than in the past—will have a chance to flourish.

Germany will have many serious problems to face, particularly in the immediate postwar years. It can work itself out of these difficulties only by exerting the necessary industry and ingenuity. The FEA program leaves adequate opportunities for solution of Germany's economic problems. The responsibility for grasping and developing those opportunities lies with the Germans themselves.

Above all it is important not to fall into the error of believing that the way out of Germany's difficulties is to permit her to go back to the old distorted patterns of production. The cost of such a course would be a last incalculably calamitous war.

SECTION XII. GERMAN DISARMAMENT AND THE ECONOMY OF EUROPE

CONTENTS

	Page
A. Possible objections to the FEA disarmament program from the European standpoint	371
B. Confusion of effects of German disarmament with the inevitable results of war and the distorted character of the German economic structure	372
C. How the FEA program will affect the European economy	372
D. The immediate effects of an execution of the FEA program on the European economy	374
E. The long-run beneficial effects of the FEA program on the European economy	375
F. Need of supplemental action by United Nations on European reconstruction	376
G. Conclusions	377

81776—46——25

Section XII

GERMAN DISARMAMENT AND THE ECONOMY OF EUROPE

For many years prior to World War II, Germany had been a predominant factor in the economy of Europe. This was in part a result of her central position, her great natural resource of coal, and the energy and industrial capacity of her people. Of equal or perhaps greater importance, however, was the deliberate attempt by her industry and government to build up war industry and by any and every means to secure economic domination over the other countries of Europe. In Germany these factors resulted in a development of many industries far beyond the needs of a peacetime economy, and the development of industries which could not support themselves without government aid or other artificial advantages. In other European countries they resulted in the stunting of industries that might have developed if German economic policies had permitted them to do so, and in German control of many industries by one means or another. Those countries could not, therefore, develop industrial technique and personnel commensurate with their own resources and potential market demand. Thus in many ways the economy of Germany and of Europe was twisted and distorted far from its normal development.

The effects of the FEA disarmament program on the economy of Europe should be considered in the light of this background.

A. Possible Objections to the FEA Disarmament Program From the European Standpoint

The FEA disarmament program will at once drastically modify German industrial capacity and policies and strongly affect the economy of the rest of Europe. Hence, one may reasonably ask whether or not seriously detrimental short- and long-run effects may not accrue from its operation. One may fear, for example, that without immediate aid from the output of German industry the overrun countries will lack vitally needed materials and industrial products for relief of their destitute people and rebuilding of their homes and industry. Moreover, one may be concerned lest in the long run the substantial reduction of German heavy industry and of other German industries with important war potential may so reduce Germany's purchasing power and standard of living that the rest of Europe will suffer. It may be argued that prosperity is indivisible; that the rest of Europe cannot be prosperous because the FEA disarmament program will permanently cripple German industry.

Answers to these questions will be developed in the course of this section.

B. Confusion of Effects of German Disarmament With the Inevitable Results of War and the Distorted Character of the German Economic Structure

In raising these questions one must carefully distinguish between the effects of the disarmament program and the effects of preparations for war and of the war itself. In preparing for war, Germany considered her whole economy and all of her people primarily as instruments for fighting a victorious war. The result was a wholesale distortion of her economic structure. A large proportion of her people were herded into industries which produced only for war, and the consumption habits of the whole population were modified in the light of the needs of the German war machine. Even prior to the outbreak of the war, the policy of autarchy and of trade controls made Germany a poor partner in international exchange of goods. Obviously disarmament cannot be blamed for this distortion of the German economy or its necessary reconversion to peaceful industry. Neither can disarmament be held responsible for the hardships that will accompany the reconversion itself. The economies of nearly all countries suffered serious distortion during the course of the war and must reconvert to peaceful industry now that hostilities have ceased.

Likewise, it should be recognized that the enormous destruction of people and of property in Germany and the other European countries engaged in the war resulted from the war itself. The execution of the FEA disarmament program or any other similar one should not be considered a cause of the poverty and hardship resulting from such destruction.

C. How the FEA Program Will Affect the European Economy

1. The FEA plan will free European countries from German economic and industrial domination. Relief from it will remove a great hindrance to their attainment of a sound, well-balanced economy. This domination was built up over a long period of time by the use of a variety of methods and devices.

(*a*) One of the most important instruments of economic domination used by Germany was the cartel system. This system was used by the German Government and German industry both as a war weapon and as a means of restricting certain industrial developments of other countries. As a war weapon, cartels provided the Germans with new inventions and industrial techniques of other countries, provided them with means of increasing their production of vital war materials, collected economic information of military value, and served as camouflage for espionage activities. In some cases they were used to hamper the efforts of other countries to prepare for the inevitable military conflict with Germany. As devices to restrict the industrial development of other countries, cartels enabled the Germans in various ways to limit output of many important commodities by firms in other countries, particularly by allocating territories, fixing prices, establishing production and sales quotas, regulating imports and exports, and by patent manipulations.

The FEA disarmament program proposes to bring to an abrupt end all German participation in international cartels and in this

way will make the industry of other European countries independent of that kind of German domination.

(*b*) A second type of manipulation by which Germany interfered with the economies of many countries involved numerous devices of import-export control. These controls were developed over a period of many years and culminated in elaborate measures used by the Nazis, the most important of which were exchange clearing, the aski procedure, and arrangements involving various degrees of depreciation of the German currency for particular transactions or groups of transactions. By use of clearing arrangements Germany built up a huge foreign debt which her creditors could collect only by accepting such goods as Germany chose to export to them. At the end of the war, by means of these devices Germany owed over 20 billion reichsmarks to the other countries of Europe which had been able to develop some industries which could not be maintained under normal import-export transactions.

The FEA disarmament program would prevent Germany from continuing the use of these devices and will thus permit the other European countries to develop their economies in a normal manner.

(*c*) By various methods Germany acquired ownership or control of large amounts of physical property and other assets in countries throughout the world. This occurred both before and during the war. Some property was acquired by lawful purchase, but great amounts were acquired by open looting and plunder, by forced transfers under duress, and by hidden devices which gave the semblance of legality. Through such acquisition Germany was able to manipulate important segments of the economies of other countries in her own interest. Unless drastic and thorough measures are promptly taken to restore this property to local interests not under German influence, Germany will be able to continue her interference with the economic development of these countries.

The FEA disarmament program proposes to make such restoration of assets currently owned and controlled by Germans. It will thus further the free development of the economies of the other countries of Europe.

(*d*) In addition to the measures discussed under (*a*), (*b*), and (*c*), which are primarily designed to free Europe from German domination and thus enable normal economic activity to develop, the FEA disarmament program would give these countries plant, equipment, and processes, particularly from German heavy industry, and protect them from German domination while the industries become established and independent. In this way a better economic balance will be reached in Europe.

During the period in which these new industries are being constructed in the surrounding countries and acquiring operating efficiency, their needs for basic materials and manufactured goods can readily be supplied from the large available excess capacity in the United States and Great Britain. The removal, for example, of steel capacity, aluminum production facilities, and machine-tool manufacturing equipment from Germany will not under present conditions create a scarcity of their products in Europe even though Germany was a huge supplier before the war.

A careful analysis of the exports of manufactures most affected by the FEA program shows, however, that Europe, which on the average took about 70 percent of Germany's exports in the interwar period, need not be dependent on Germany for the supply of these goods. Moreover, in 1938, Europe, including Great Britain and minus Germany and Russia, was a net exporter of iron and steel and their manufactures to the amount of $160,000,000. In vehicles, the same Europe in the same year had net exports of $54,000,000, in chemicals of $16,000,000. In the case of electrical machinery, Europe, excluding Germany and Russia, had a small import balance of less than 2¼ million dollars and a moderately large import balance of about 25 million dollars for other machinery in 1938. These needs, therefore, could easily be supplied by Great Britain and the United States.

2. The FEA program would permit and encourage the production and exportation from Germany of a wide variety of peacetime products to meet the needs of Europe for certain types of commodities, particularly those which can be produced in Germany with negligible danger to world peace. The terms of acquisition will depend upon the German balance of exports and necessary imports at the given time. If Germany is able to produce more than enough for its own needs and to pay for imports, the surplus will be taken as reparation. If it is unable to produce a surplus for reparation, but is able to produce goods to buy needed imports, it will be permitted to export these goods as normal commercial exports.

A large variety of products will be dealt with in this way under the FEA program. They will include, for example, coal, timber and wood products, building materials, potash, textiles, clothing, light consumer metal goods, a limited amount of new machinery, and light chemicals. In this way European countries can acquire many of the materials and commodities they need.

Under the program, increased production of coal and timber is stipulated and production of the other items indirectly encouraged by restrictions in other fields.

3. Under the FEA program, European countries will receive vast quantities of existing stocks of German industrial equipment on a reparation basis. This will include many types and sizes of machine tools and machinery and other equipment in endless variety. This will permit the reconstruction of industries which were destroyed or removed to Germany during the course of the war and provide for the building of new industries which will raise the economic potential of the surrounding countries and improve their standard of living.

D. The Immediate Effects of an Execution of the FEA Program on the European Economy

There is little doubt that during the next few years Europe will be poor. The immediate and by far the most important reason will be the destruction, disorganization, and loss of population that accompanied the war. Some countries, such as Great Britain and the Netherlands, have lost important sources of foreign income. Others, such as Norway and Denmark, have lost much of their merchant shipping, which was an important source of income for the purchase of needed imports. Since economic levels will be low throughout Europe, the scope of international trade will be severely restricted.

Poor people can afford to purchase few things. Some countries will no longer be able to sell commodities to Germany in the same amounts as before and during the war. As a result of war destruction, Germany will be poor for a long time to come. As pointed out above, however, the inability to sell to Germany as before will not be as disastrous as it may appear, since much of this trade was financed by the countries which sold to Germany and no quid pro quo was received in the form either of acceptable goods or services for much of it. In addition, these countries will suffer from the prior unsound development of these export industries. These are among the inevitable results of total war.

Although the FEA disarmament program will require the removal or destruction of German industry considered dangerous because of its war potential, the program will enable large amounts of needed materials and commodities to be received in the form of German exports or reparation. Some of these items, notably coal, textiles, timber and other building materials, will be badly needed. The removal of equipment from Germany will soon enable people in other countries to go to work, at first in installing the equipment and then at operating it. The beneficial effects of this employment will quickly spread throughout the economies involved and will help overcome the disastrous effects of the war. The industries thus set up will be free from unfair methods of competition previously practiced by Germany and from direct or indirect control by Germany.

A further immediate result of the FEA program will be the freeing of all the surrounding countries from fear of German aggression. This will make possible far smaller expenditures of labor and materials going into war preparations than otherwise would be the case. The use of these resources for peacetime needs will raise the level of living in all of the countries which were forced earlier to maintain military establishments. The removal of fear of Germany will make competitive armament unnecessary. Consequently, the whole of economic activity, no matter how rapidly it increases, will go toward improving living standards.

E. The Long-Run Beneficial Effects of the FEA Program on the European Economy

The most important ultimate effect of the disarmament of Germany will be the removal from Europe of fear of German aggression. So long as disarmament remains in effect and German industry devotes itself solely to peacetime production, European countries will not be compelled to weight themselves down with war preparations. They will be free of the necessity of molding their economies toward war. All of their energies can be used for peaceful ends and improving their living conditions. Military and economic alliances need not arise to interfere with efficient peacetime use of their resources.

Second, the elimination of autarchic policies from Germany and the cessation of its interference with the economic development of other countries will greatly increase freedom of trade and enterprise in Europe. Autarchy was deliberately adopted by Germany to develop certain types of production so that it would be as nearly self-sufficient as possible when its war preparations were complete. The

cost of this policy doubtless fell largely upon its own people, since they paid direct costs in the form of subsidies and higher prices arising from tariff protection. Some of the direct and hidden costs in the form of higher prices of imports were also borne by other countries. The abandonment of autarchy and the elimination of German interference with the economic development of other countries as described in paragraph (C) (1) above will increase freedom of trade and enterprise and mean a more economical utilization of labor and material resources throughout Europe. This should result generally in increased prosperity and higher standards of living.

Third, many of the new industries built up by means of the machinery and equipment taken from Germany as reparation will be protected under the FEA program for control of production of exports in German heavy industry. At least they would have an opportunity to pass the "infant industry" stage. Those that are sound in the light of the country's resources and market demand will then be able to survive possible future competition from Germany. In the long run, therefore, the program should result in a much better industrial balance in Europe.

Fourth, the FEA program contemplates that Germany must permanently import certain kinds of materials which are particularly vital to war preparations. So far as this requires the importation rather than the synthetic production of certain basic materials such as rubber and petroleum products, it will require the abandonment of autarchy. In any case, however, it will require Germany to participate in world trade for purposes of her peacetime economy. This should redound to her benefit as well as to that of her neighbors.

Fifth, under the FEA program, Germany will become a country with only peaceful industries or war industries adequate only to supply peacetime needs. It has been so devised as to disarm Germany but not to prevent the development of peaceful industry. In the long run, under its operation, the German people will receive all of the rewards of their industry instead of having their efforts dissipated in war preparations. This should mean an even higher standard of living for the people, and this in turn will make Germany a country with which a large trade can prosper. This should mean an eventual rise in the standards of living in the other countries of Europe.

F. Need of Supplemental Action by United Nations on European Reconstruction

Although many direct and indirect beneficial effects should follow the disarmament of Germany under the program, the destruction of people and of capital and the distortion and disorganization of economies resulting from the war have been so great that both immediately and in the long run supplemental measures will be needed to bring about recovery. This program was designed primarily to disarm Germany, not to provide for these other measures, which are important corrollaries.

Immediate aid in the form of food, materials, and equipment from the United Nations will be needed until the mines, railroads, factories, and farms of Europe again become productive enough to enable people to get on their feet. In the longer run, positive measures should be

taken to break down barriers to the international exchange of commodities and build up peaceful industry and higher standards of living. The stronger nations should be prepared to grant credits which will aid in the building up of industry. The FEA program will provide a framework for this insofar as it frees Europe from fear of German aggression and economic domination. It will also provide a background for the operation of the Monetary Stabilization Fund and the International Bank for Development and Reconstruction in the rebuilding of European industry.

G. Conclusion

The primary purpose of the FEA disarmament program is to disarm Germany and to free the surrounding countries of Europe from German economic domination. In accomplishing this purpose, the program will require profound changes in the German economy and its relation to the rest of Europe. These changes will not interfere with the development of peaceful industry in Germany, but will require a change from production of war goods and heavy industrial products to goods for peacetime consumption. They will no longer permit Germany to export large or unlimited quantities of products of heavy industry, but will permit production and exportation of many light production and consumer goods.

Changes will also be brought about in the economies of the surrounding countries. They will acquire new industries through reparation, which should in time make them largely independent of Germany for many types of heavy industrial products. They will be able to export to Germany certain types of materials and products which Germany may no longer produce. On the whole, there should develop a larger and freer movement of goods in international as well as domestic markets than Europe has ever seen.

In these ways, a much better industrial balance should be reached in Europe and a more economical use of resources and people should be attained. These should mean a sounder economy and ever-rising standards of living. The removal of fear of German aggression and the opportunity for all countries, including Germany, actually to use all resources for peacetime purposes should go far toward changing the international climate from one of preparation for war to one of production of goods for peacetime use.

